CONTROL DATA® QSE 14965

CONVERSATIONAL DISPLAY TERMINAL

CONTROL DATA
CORPORATION

SPECIAL PURPOSE MANUAL

QSE 14965
CONVERSATIONAL DISPLAY TERMINAL
SPECIAL PURPOSE MANUAL

REVISION RECORD

REVISION	DESCRIPTION
A-0	Final release.
(01-23-74)	
B	Appendix A added to manual to document Repair Change Order
(10-07-74)	CDO 8697. ECO DT1704 will formally implement the RCO changes
	in a later version of this manual.

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0784-0A

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ST PAUL, MINNESOTA 55113

or use Comment Sheet in the back of this manual.

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CONFIGURATION INFORMATION

This manual reflects the equipment configurations listed below:

EXPLANATION: Locate the equipment type and series number, as shown on the equipment FCO log, in the list below. Immediately to the right of the series number is an FCO number. If that FCO number and all of the FCO numbers underneath it match all of the FCO numbers on the equipment FCO log, then this manual accurately reflects the equipment.

Equipment Type	Series	With FCO's
QSE 14965		

FOREWORD

This publication describes the design changes made in the CC5A5-A and CC5A6-A CONTROL DATA® Conversational Display Terminal for QSE 14965. Except for the changes described in this manual, this equipment is identical to the CC5A5-A and CC5A6-A equipment. Changes incorporated are:

External communications interface for AT&T 202 series modem meeting RS-232-B standards.

Interface board in logic module changed from 1EZE-1 to 1EZE-3.

Receive mode disabled during block mode transmission.

Options available for this equipment are:

Name	Equipment
Expanded Memory Kit	BT1A9-A (Internal)
Nonimpact Printer, 60 Hz	CN503-A (External)
Nonimpact Printer, 50 Hz	CN503-B (External)

The operation of the nonimpact printer is described in the respective on-site customer engineering manual. The expanded memory option is described in the on-site customer engineering manual for the CC5A5-A and CC5A6-A.

This terminal acts as a remote message I/O device operating primarily within a central processor controlled telecommunications system. The terminal provides standard teletypewriter I/O functions and is designed to serve as a replacement for teletypewriter remote terminals. An output channel is contained in the terminal to enable use of an optional printer for a hardcopy of displayed messages.

This manual consists of a General Description which describes the changes made to the standard CC5A5-A and CC5A6-A equipment for QSE 14965, and the Diagrams portion, which provides diagrams involved in the design changes incorporated in QSE 14965.

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RCO CDO 8697 . . . . A-1

FIGURES

GENERAL DESCRIPTION

Figure

1 Display Terminal 1

QSE 14965

GENERAL DESCRIPTION

The display terminal, figure 1, is designed to operate as a video display, telecommunications, remote terminal capable of transmitting and receiving messages on either leased or dial telephone lines. The terminal is composed basically of a CRT display screen and an alphanumeric keyboard housed in a single cabinet. The terminal provides an operator with composition versatility not possible with conventional teletypewriter terminals, and operates quickly and relatively noise-free as compared to a teletypewriter terminal.

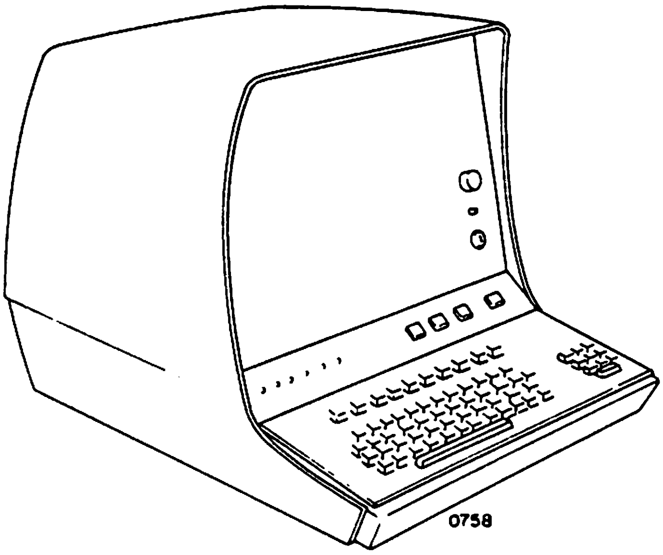


Figure 1. Display Terminal

This display terminal is expressly designed for telecommunication systems at any location which provides an asynchronous EIA Standard RS-232-B modem (modulator/demodulator) equivalent to the AT&T 202 series modem. The terminal operator may select character-by-character transmission mode or block mode transmission. In block mode, any number of characters up to a full display screen can be transferred in one operation. During a block mode transfer, all received data is ignored.

DIAGRAMS

This section provides those diagrams involved in the design changes made to the standard CC5A5-A and CC5A6-A terminals to meet the requirements of QSE 14965.

DWN	J. Wells	11/21/73	**CONTROL DATA**	TITLE MODEM INTERFACE MODIFICATION	PREFIX SE	DOCUMENT NO 15600100	REV A
CHKD							
ENG				FIRST USED ON QSE 14965		SHEET 1 of 4	
MFG							
APPR			CODE IDENT 15920				

SHEET REVISION STATUS

D SIZE 4	3	2	1
A	A	A	A

REVISION RECORD

REV	ECO	DESCRIPTION	DRFT	DATE	APP
A	00088-58	RELEASED CLASS A	—	1/22/74	M.C.T.

NOTES:

1. Equipment Identification: QSE 14865.
2. Description: Rework 1EZE-1 board to 1EZE-3 board to allow CCSA5A and CCSA6A to operate with a Bell 202 modem.and meet RS232-B standards.

APL 15600100

DETACHED LISTS

CODE IDENT 15920	SHEET 2	SE	DOCUMENT NO. 15600100	REV A

3. Applicable Documents:

4. Remove 1EZE-1 board P/N 90310900 from location B1 of logic rack.

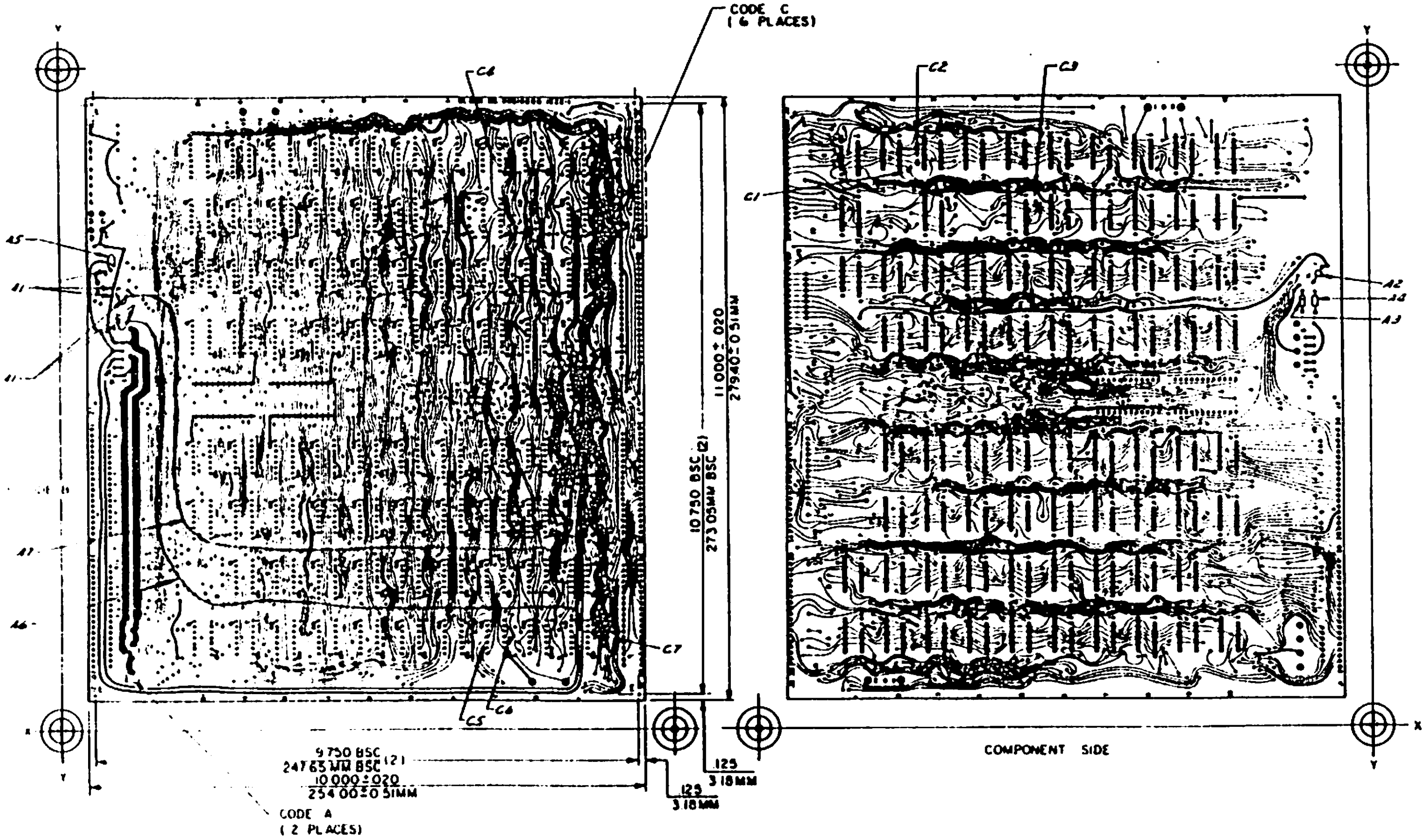
5. Rework 1EZE-1 board P/N 90310900 to 1EZE-3 board P/N 90366500 as shown On "D" Size Drawing 15600100 Sheet 4.
   A. Make following cuts as shown on page four.
      C1. Foil to K2-6 Component side
      C2. Foil to K3-6 Component side
      C3. Foil to H5-2 Component side
      C4. Foil to K3-6 Solder side
      C5. Foil to A3-10 Solder side
      C6. Foil to A3-5 Solder side
      C7. Foil to A1-3 Solder side

   B. Make following additions (steps with "A" in front shown on page four):
      A1. Drill 6 0.037 dia. holes at approximate points shown being careful not to drill through foil paths.
      A2. Mount a 1 uf 35V capacitor P/N 51617104 at location shown with polarity as shown.
      A3. Mount a diode P/N 51001239 at location with the band end as shown.
      A4. Mount 30K 1/4 watt resistor P/N 24500098 at location shown.
      A5. Connect the lead of the 1 uf capacitor to foil pad as shown.
      A6. Add a wire from A1-3 to the 30K resistor and diode leads as shown.
      A7. Add a wire from B1-10 to all three components leads as shown.

      Add wires between the following locations:
       8. B1-8 to A1-4
       9. A1-6 to J6-37
      10. A10-8 to H9-13
      11. H9-13 to K1-5
      12. A3-6 to G7-2
      13. B5-7 to G7-1
      14. G7-3 to K3-5
      15. K3-6 to K5-5
      16. A3-10 to A3-4
      17. A10-6 to A3-1

REVISION STATUS OF DRAWING	ARTWORK REVISION STATUS SIDE 1	ARTWORK REVISION STATUS SIDE 2
A	—	—

A 83-58 RELEASED CLASS A



SOLDER SIDE
DRILL THIS SIDE

HOLE SCHEDULE 3, 4

PAD SIZE SCALE 2/1	CODE	HOLE DIA	NO OF HOLES	TOLERANCE
◉	A	.070 1.78MM	8	±.005 ±0.13MM
◉		.043 1.09MM	160	±.005 ±0.13MM
●	H	.039 0.99MM	10	±.003 ±0.08MM
◉	C	.035 0.89MM	225	±.003 ±0.08MM
●		.035 0.89MM	249	±.005 ±0.13MM
●		.031 0.79MM	722	±.005 ±0.13MM
◉	D	.062 1.57MM	4	±.005 ±0.13MM
●	E	.125 3.18MM	4	±.005 ±0.13MM
●		.031 0.79MM	1128	±.005 ±0.13MM
◉		.092 2.34MM	4	+.003 -.002 +.008 -.05MM
●		.031 0.79MM	2	±.005 ±0.13MM
●		.026 0.66MM	15	±.005 ±0.13MM

NOTES

1. HOLE LOCATION PER REDUCED PRINTED CIRCUIT MASTER T-90310800.
2. GLASS EPOXY LAMINATE .062 (1.57MM) THICK PER MIL-P-13949, TYPE GF (FR-4), 1 OZ (28.35G) COPPER BOTH SIDES, WITH .0007 INCH (0.018MM) SOLDER COAT BOTH SIDES.
3. ALL HOLES SHOWN ON COMPONENT SIDE WITH CIRCUITRY CONNECTED MUST BE PLATED THRU, THRU HOLE PLATING ON ALL OTHERS IS OPTIONAL.

4. ONLY FINISHED HOLE SIZES ARE SPECIFIED
5. THE SUPPLIERS UL RECOGNITION SYMBOL SHALL BE MARKED ON THE BOARD
6. BOARD TO BE FABRICATED PER CDC SPECIFICATION 14041700

DO NOT SCALE DRAWING

CONTROL DATA

QSE 14965

E. GEORGE 11/22/78

PRINTED WIRING BOARD IEZE-1
(REWORKED)

15920 D 15600100

1/1

CONTROL DATA	CODE IDENT			DOCUMENT NO	REV
	15920	SHEET 3	SE	15600100	A

C. Restamp board 1EZE-3 P/N 90366500 Revision A.

NOTE: There is a taped verision of 1EZE-3 board available that can be used in place of the reworked 1EZE-1 board.

6. Install 1EZE-3 board in location B1 of logic module.

7. Remove old logic module identification and put new I.D. plate with part number 61338500 on it.

8. Document Changes:

Replace pages 20 thru 30 of logic set 82295200 with logic set 62188800.

9. Operating Procedure: After installation the only change to operating is that during a block mode transmission the terminal will not receive messages.

CONTROL DATA

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
01-07-74	1	~~00000000~~ 0088-3B

DIV	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE
04-0	15600100	0	A	A	MODEM INTERFACE MOD TA	N	NIS	12-11-73	QSE14965	01-32-74

ITEM NO	LI	PART NUMBER	CD	WI	QUANTITY	U/M	PART DESCRIPTION	MC	TLD	ECO. NO. IN	ECO. NO. OUT	S/N	WE IN	WE OUT
001	01	51617104	8		1	PC	REPLACED BY 51860328	P			590285			7401
001	02	51860328	7		1	PC	CAP FXD TANT 1UF 36VDCW	P		590285			7401	
002	01	51001239	6		1	PC	DIODE SIL 75V IN3064	P						
003	01	24500098	9		1	PC	RES FXD 30K 1/4W	P						
004	01	62629902	9		AR	FT	WIRE ELEC 30GA SOLID	B						
005	01	62156900	7		1	PC	ID PLATE EQUIPMENT MEDIUM	P						
006	01	82295200	8		REF	PC	LOGIC SET	U						
007	01	62188800	7		REF	PC	QSE 14965 LOGIC DIA	U						
							0008 TOTAL LINES							

DWN	D. Wells	11/27/73	TITLE MODEM INTERFACE MODIFICATION	PREFIX SPL
CHKD		1/7/74		DOCUMENT NO 66189300
ENG		1/7/74	FIRST USED ON QSE 14965	REV A
MFG		1/11/74		SHEET 1 of 2
APPR		1/7/74	CODE IDENT 15920	

SHEET REVISION STATUS

2	1
A	A

REVISION RECORD

REV	ECO	DESCRIPTION	DRFT	DATE	APP
A	00088-58	RELEASED CLASS A	—	1/21/74	G.C.T.

NOTES:
1. Top Assembly 15600100.
2. Equipment Configurator 15600000.

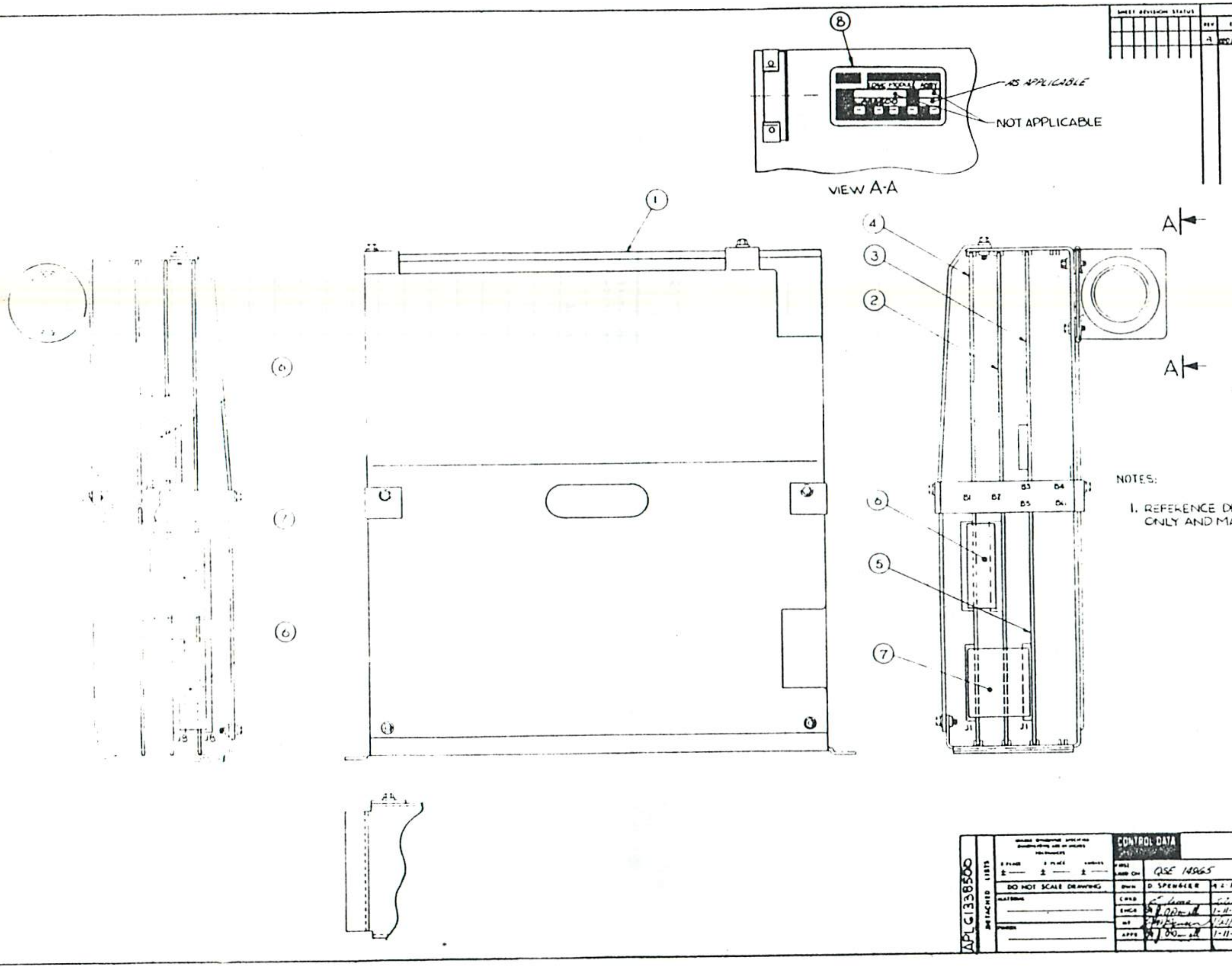
DETACHED LISTS

CONTROL DATA

CODE IDENT	SHEET		DOCUMENT NO.	REV
15920	2	SPL	66189300	A

FIND NO	PART IDENTIFICATION	QUANTITY REQUIRED	UNIT OF MEAS	NOMENCLATURE OR DESCRIPTION	SPECIFICATIONS, NOTES, OR MATERIAL
1	61338500	1		LOGIC MODULE	

SHEET REVISION STATUS	REV	ECO	DESCRIPTION	DFT	DATE	CHKD	APP
	A	PC26-58	RELEASED C.AS A	—		—	—



NOTES:

1. REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND MAY NOT APPEAR ON THE PART

APL G1338500

DETACHED LISTS

DO NOT SCALE DRAWING

CONTROL DATA

QSE 14965

DWN D SPENCER 4-2-73

CHKD 1-11-74

ENGR 1-11-74

MF

APPD 1-11-74

TITLE LOGIC MODULE ASSEMBLY

CODE IDENT 15920

D

DRAWING NO 61338500

SCALE 1/1

NHA

SHEET — OF —

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
01-17-74	1	~~[illegible]~~ 00088-97

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE
0860	61338590	4	A	U	LOGIC MODULE ASSY	N	MIS	01-11-74	08E14966	01-17-74

T	FIND NO	LI	PART NUMBER	CD		QUANTITY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WE IN	WE OUT
	001	01	61206400	7		1	PC	LOGIC CHASSIS ASSY	N						
	002	01	62149400	6		1	PC	CARD ASSY 1FDE	A						
	003	01	90137100	5		1	PC	CARD ASSEMBLY OJHD	A						
	004	01	90366900	8		1	PC	CARD ASSY 1EZE-3	A						
	005	01	90311400	1		1	PC	CARD ASSY 2BCD-1	A						
	006	01	61207903	7		3	PC	SIGNAL JUMPER CABLE ASSY	A						
	007	01	61207904	5		2	PC	SIGNAL JUMPER CABLE ASSY	A						
	008	01	62158600	7		1	PC	ID PLATE EQUIPMENT MEDIUM	M						
								0008 TOTAL LINES							

CONTROL DATA

ASSEMBLY PARTS LIST

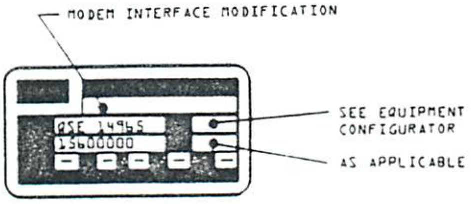
PRINT DATE	PAGE	FILE CHANGE NO
01-07-74	1	~~00000000~~ 10088-58

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE
0840	15600000	2	A	A	MODEM INTERFACE MOD EC	N	REL	- -	05E14965	01-07-74

T	FIND NO	LI	PART NUMBER	CD	MN	QUANTITY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WE IN	WE OUT
	001	01	15600100	0		1	PC	MODEM INTERFACE MOD TA	N						
	002	01	42156400	7		1	PC	ID PLATE EQUIPMENT MEDIUM	M						
	003	01	10124206	3		1	PC	MINI FCO LOG	M						
								0003 TOTAL LINES							

CONTROL DATA		CODE IDENT	SHEET		DOCUMENT NO	REV
		15920	2	A	15600000	A

1. Affix Identification Plate on back of Logic Module.
2. Affix FCO Log on back of Logic Module.



IDENT PLATE
INFORMATION
SCALE:1/1

SHEET REVISION STATUS

REVISION RECORD						
REV	CO	DESCRIPTION	DRFT	DATE	CHKD	APP
01	00088-26	CLASS B RELEASE	—	5/30/72	—	P.C.T.
02	DT00661	REV PER ECO	G.W.H.	7-13-72	[illegible]	[illegible]
03	00791	REVISE PER ECO	T.M.	10-25-72	[illegible]	[illegible]
04	DT790	REVISED PER ECO	[illegible]	[illegible]	[illegible]	[illegible]
A	00088-36	RELEASED CLASS A	—	1/19/73	—	P.C.T.
B	00948	REVISED PER ECO.	T.M.	[illegible]	[illegible]	KF
C	01704	REVISED PER ECO	MNTD	10-11-73	[illegible]	[illegible]

SHEET NO	CROSS REFERENCE NUMBER	REV	LOGIC DIAGRAM TITLE
1			LOGIC DIAGRAM CONTROL SHEET
2		A	KEY TO SYMBOLS
3	000	A	BASIC CONTROL RING COUNTER
4	001	B	BASIC CONTROL SCAN AND Y COUNTERS
5	002	B	BASIC CONTROL CURSOR X COUNTER
6	003	B	BASIC CONTROL CURSOR Y COUNTER
7	004	B	READ ONLY MEMORY AND VIDEO SERIALIZER
8	005	B	BASIC CONTROL PROTECTED FIELD
9	006	B	BASIC CONTROL SCROLL AND Y COUNTER
10	007	B	BASIC CONTROL CURSOR MOVEMENT
11	008	B	BASIC CONTROL DATA PATHS. BASIC CONTROL CURSOR MOVEMENT
12	009	B	BASIC CONTROL X COUNTER
13	200	A	BASIC MEMORY CONTROL 8 LINES
14	201	A	MEMORY INPUT
15	202	A	MEMORY MUX 2^5 & 2^6
16	203	A	MEMORY MUX 2^3 & 2^4
17	204	A	MEMORY MUX 2^1 & 2^2
18	205	A	MEMORY MUX 2^0
19	206	A	MEMORY OUTPUT
20	300	A	MASTER CLEAR AND ALARM
21	301	A	BLOCK TRANSFER CONTROL
22	302	A	DISASSEMBLY REGISTER
23	303	A	RECEIVE LOOP CONTROL AND START BIT
24	304	A	WORD LENGTH COUNTER AND SCROLL CONTROL
25	305	A	PRINTER CONTROLS AND FUNCTION DECODER
26	306		COMPRESSION MODE CONTROLS
27	307	A	PARITY AND BREAK CHECKERS
28	308	A	BLOCK MODE TRANSFER CONTROLS
29	309	A	REQUEST TO SEND TIME OUT
30	500	A	CLOCK MATRIX
31	500A	A	TRANSMIT CLOCK
32	501	A	RECEIVE CLOCK
33	502	A	ASSEMBLY REGISTER AND INPUT CONTROL
34		B	SIGNAL IDENTIFIER IFDE-I BOARD
35		A	SIGNAL IDENTIFIER MEMORY BOARD
36		A	MEMORY TIMING. DISPLAY TIMING. & CONTROL
37		A	TIMING DIAGRAM
38		A	TIMING DIAGRAM
39		A	TIMING DIAGRAM
40		A	TIMING DIAGRAM

SHEET NO	CROSS REFERENCE NUMBER	REV	LOGIC DIAGRAM TITLE

NOTES

1. FOR LOGIC CHIP INFORMATION SEE DWG 82297000 (KEY TO SYMBOLS).

REFERENCE DRAWING			
EC 15551900			
EC 15552100			
COMPONENTS. EXCEPT AS NOTED			
	TOLERANCE	VALUE	RATING
RES			
CAP			

CONTROL DATA DATA DISPLAY DIVISION

FIRST USED ON	CC5A5 A/5A6-A	
DWN	DAK	5/17/72
CHKD	[illegible]	5/17/72
ENGR	[illegible]	5/18/72
MFG		
APPR	[illegible]	1-17-73

TITLE

LOGIC DIAGRAM
CONTROL SHEET

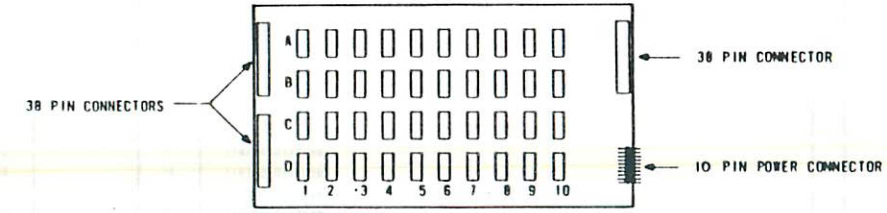
CODE IDENT 15920 | C | DRAWING NO 82295200

SCALE | CROSS REF NO | SHEET 1 OF 40

THE FOLLOWING DIAGRAMS SHOW ALL THE CIRCUITRY ON EACH PRINTED CIRCUIT CARD AND THEIR INTER CONNECTIONS BECAUSE OF THEIR SIZE MORE THAN ONE LOGIC DIAGRAM MAY BE REQUIRED FOR EACH BOARD EACH SYMBOL ON THE DIAGRAM REPRESENTS AN INTEGRATED OR DISCREET COMPONENT ON THE BOARD EACH SYMBOL REFLECTS THE COMPONENT TYPE THE LOGIC FUNCTION PERFORMED AND THE COMPONENT LOCATION ARE WITHIN A ALPHANUMERIC MATRIX ON THE BOARD

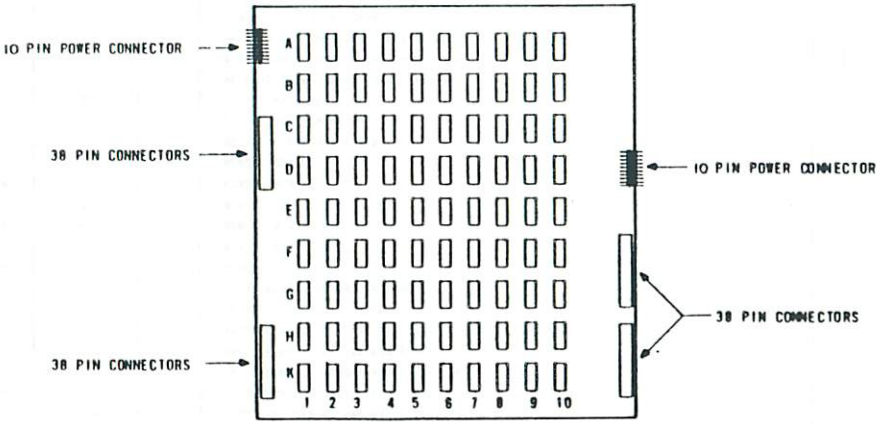
PACKAGE LOCATION ON BOARD

THERE ARE 40 LOCATION ON THIS BOARD ONE AXIS IS LABELED A B C AND D AND THE OTHER AXIS IS LABELED 1 2 3 4 5 6 7 8 9 AND 10



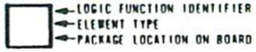
PACKAGE LOCATION ON BOARD

THERE ARE 90 LOCATIONS ON THIS BOARD ONE AXIS IS LABELED A B C D E F G H AND K AND THE OTHER AXIS IS LABELED 1 2 3 4 5 6 7 8 9 AND 10



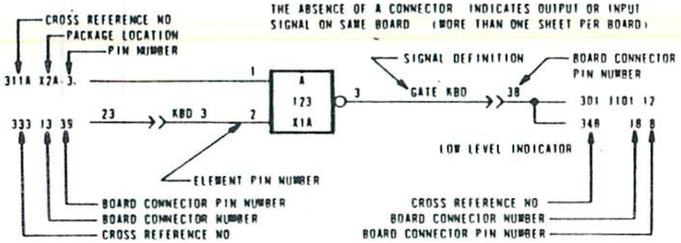
GENERAL LOGIC SYMBOL INFORMATION

INTEGRATED CIRCUIT LOGIC SYMBOL



TAGGING INFORMATION

THE ABSENCE OF A CONNECTOR INDICATES OUTPUT OR INPUT SIGNAL ON SAME BOARD (MORE THAN ONE SHEET PER BOARD)

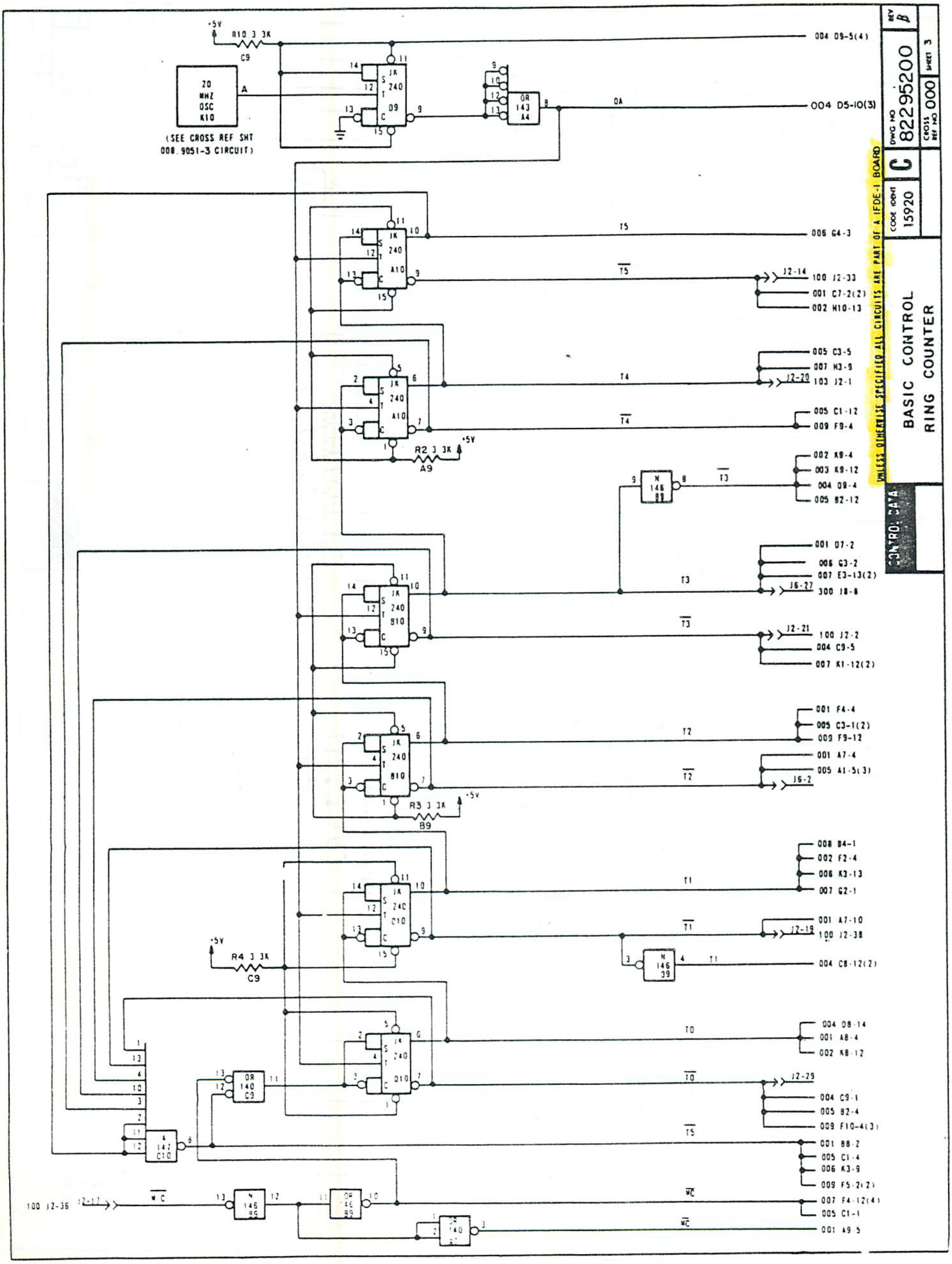


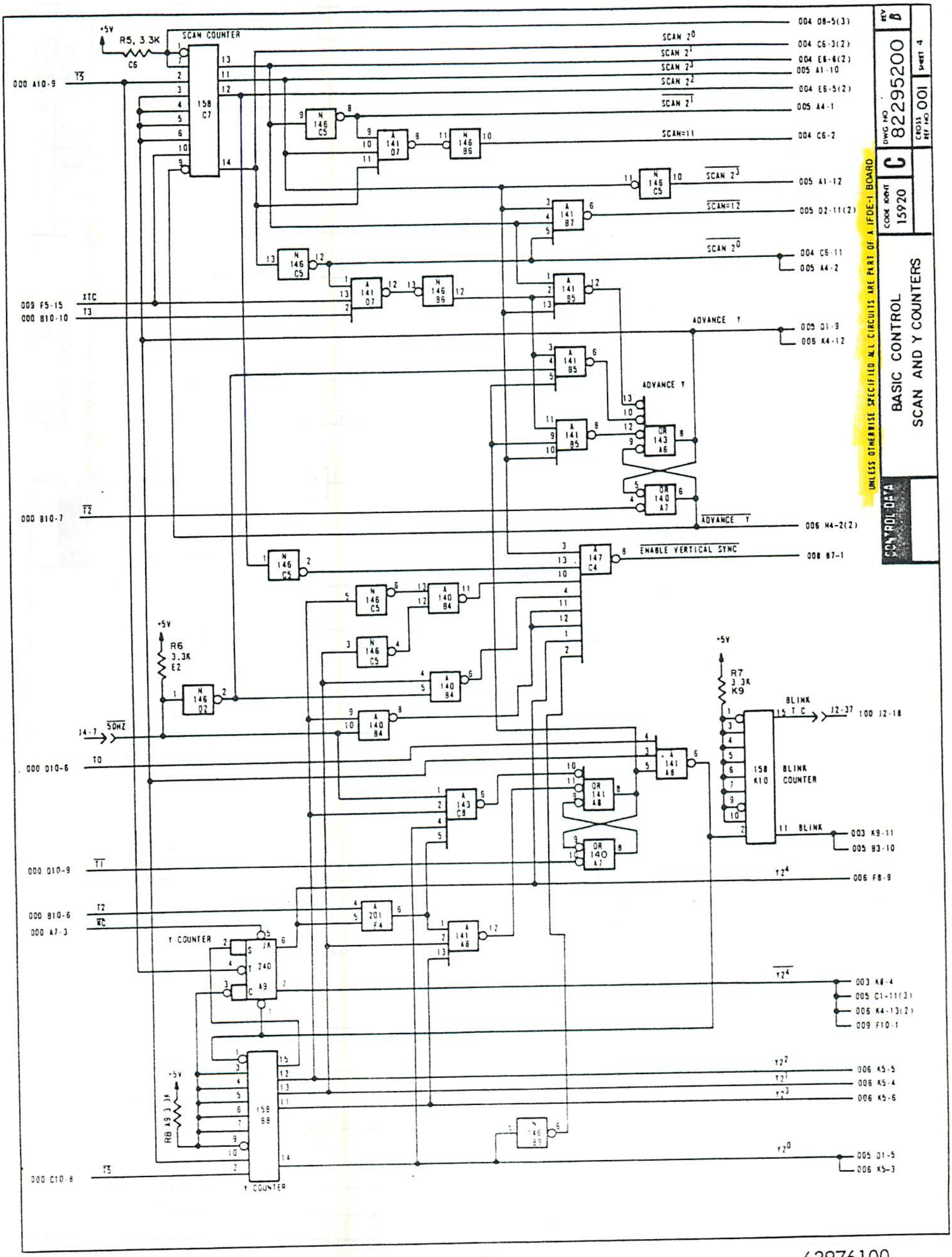
LOGIC FUNCTION IDENTIFIER

A = AND
N = INVERTER
LT = LINE TRANSMITTER
LR = LINE RECEIVER
OR = OR
E = EXTENDER

ABBREVIATIONS USED IN THIS LOGIC SET

KEY TO SYMBOLS	CODE IDENT 15920	C	DWG NO 82295200	REV A
			CROSS REF NO	SHEET 2


UNLESS OTHERWISE SPECIFIED ALL CIRCUITS ARE PART OF A IFDE-1 BOARD
CONTROL DATA
CODE IDENT 15920
C
DWG NO 82295200
REV B
CROSS REF NO 000
SHEET 3
BASIC CONTROL
RING COUNTER
+5V
R10 3.3K
C9
20 MHZ OSC K10
A
(SEE CROSS REF SHT 008.9051-3 CIRCUIT)
JK 240 D9
OR 143 A4
OA
004 D9-5(4)
004 D5-10(3)
JK 240 A10
T5
006 G4-3
$\overline{T5}$
J2-14
100 J2-33
001 C7-2(2)
002 H10-13
T4
005 C3-5
007 H3-9
J2-20
103 J2-1
$\overline{T4}$
005 C1-12
009 F9-4
R2 3.3K
A9
N 146 B9
$\overline{T3}$
002 K9-4
003 K9-12
004 D9-4
005 B2-12
JK 240 B10
T3
001 D7-2
006 G3-2
007 E3-13(2)
J6-27
300 J8-8
J2-21
100 J2-2
004 C9-5
007 K1-12(2)
T2
001 F4-4
005 C3-1(2)
009 F9-12
$\overline{T2}$
001 A7-4
005 A1-5(3)
J6-2
R3 3.3K
B9
JK 240 C10
T1
008 B4-1
002 F2-4
006 K3-13
007 G2-1
$\overline{T1}$
001 A7-10
J2-19
100 J2-38
N 146 D9
004 C8-12(2)
R4 3.3K
C9
JK 240 D10
T0
004 D8-14
001 A8-4
002 K8-12
OR 140 C9
$\overline{T0}$
J2-29
004 C9-1
005 B2-4
009 F10-4(3)
A 142 C10
$\overline{T5}$
001 B8-2
005 C1-4
006 K3-9
009 F5-2(2)
100 J2-36
J2-17
$\overline{MC}$
N 146 B9
OR 140 B9
$\overline{MC}$
007 F4-12(4)
005 C1-1
OR 140 A7
$\overline{MC}$
001 A9-5

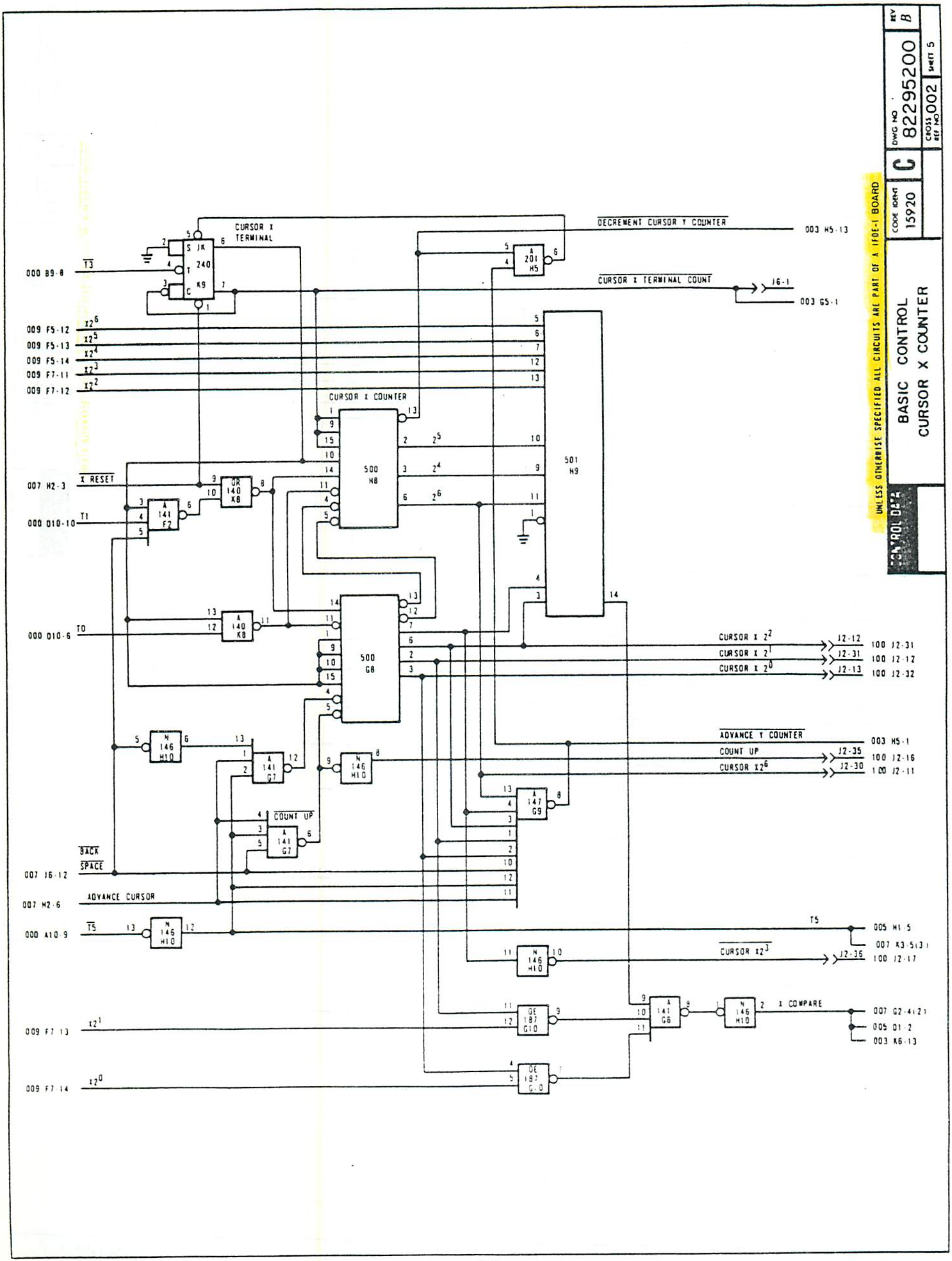


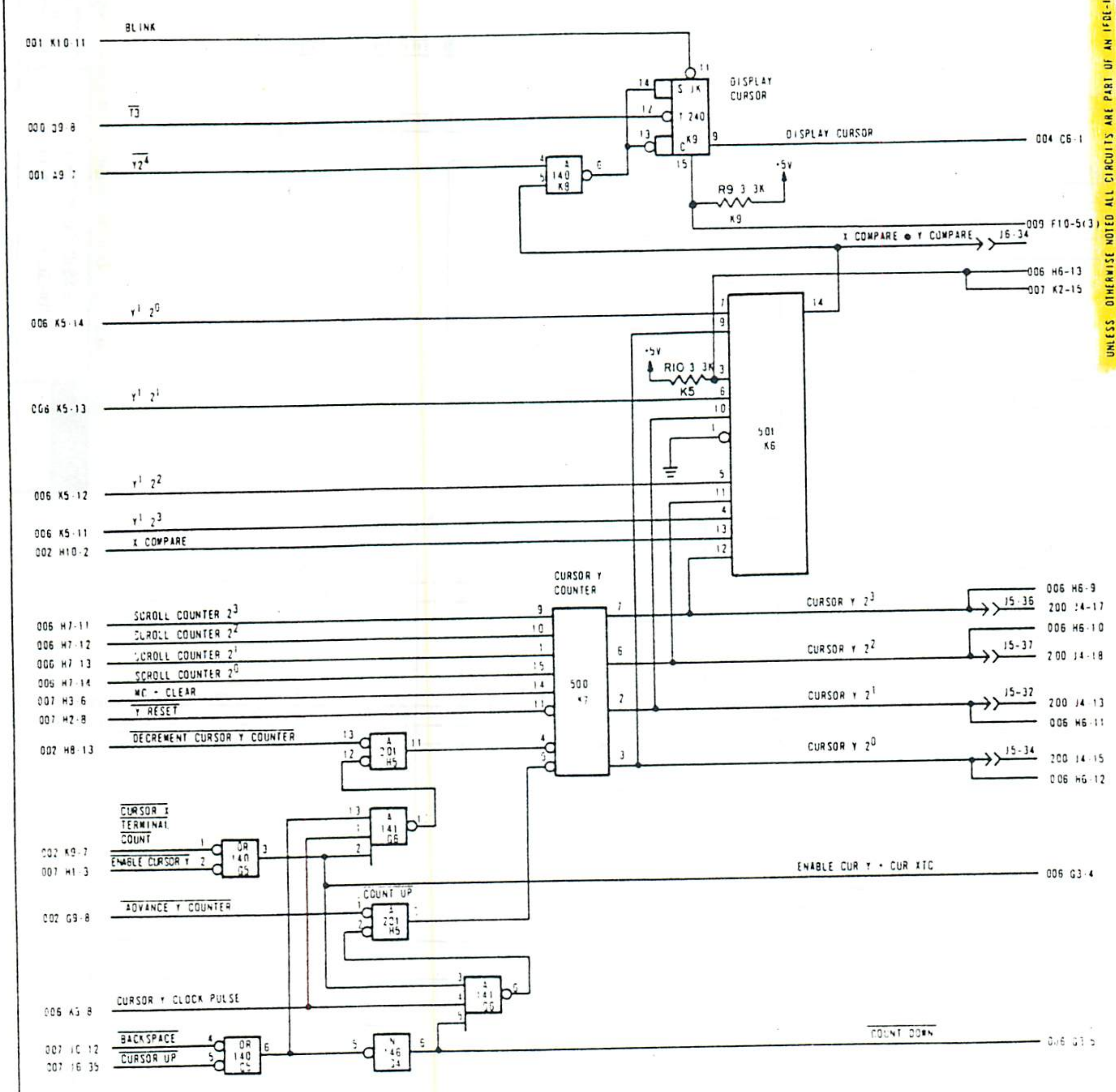
UNLESS OTHERWISE SPECIFIED ALL CIRCUITS ARE PART OF A IFDE-1 BOARD

BASIC CONTROL
SCAN AND Y COUNTERS

CONTROL DATA

CODE IDENT 15920
C
DWG NO 82295200
REV B
CROSS REF NO 001
SHEET 4

CURSOR X TERMINAL
DECREMENT CURSOR Y COUNTER
003 H5-13
CURSOR X TERMINAL COUNT
J6-1
003 G5-1
000 B9-8
T3
240 K9
A 201 H5
009 F5-12 X2^6
009 F5-13 X2^5
009 F5-14 X2^4
009 F7-11 X2^3
009 F7-12 X2^2
CURSOR X COUNTER
500 H8
501 H9
007 H2-3 X RESET
OR 140 K8
000 010-10 T1
A 141 F2
000 010-6 T0
A 140 K8
500 G8
CURSOR X 2^2 J2-12 100 J2-31
CURSOR X 2^1 J2-31 100 J2-12
CURSOR X 2^0 J2-13 100 J2-32
N 146 H10
A 141 G7
ADVANCE Y COUNTER 003 H5-1
COUNT UP J2-35 100 J2-16
CURSOR X2^6 J2-30 100 J2-11
A 147 G9
COUNT UP
007 J6-12 BACK SPACE
007 H2-6 ADVANCE CURSOR
000 A10-9 T5
T5 005 H1-5
007 K3-5(3)
CURSOR X2^3 J2-36 100 J2-17
OE 187 G10
A 141 G6
X COMPARE
007 G2-4(2)
005 D1-2
003 K6-13
009 F7-13 X2^1
009 F7-14 X2^0
UNLESS OTHERWISE SPECIFIED ALL CIRCUITS ARE PART OF A 1FOE-1 BOARD
CONTROL DATA
BASIC CONTROL
CURSOR X COUNTER
CODE IDENT 15920
C
DWG NO 82295200
REV B
CROSS REF NO 002
SHEET 5



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF AN IFDE-1 BOARD

CONTROL DATA

BASIC CONTROL
CURSOR Y COUNTER

CODE IDENT 15920

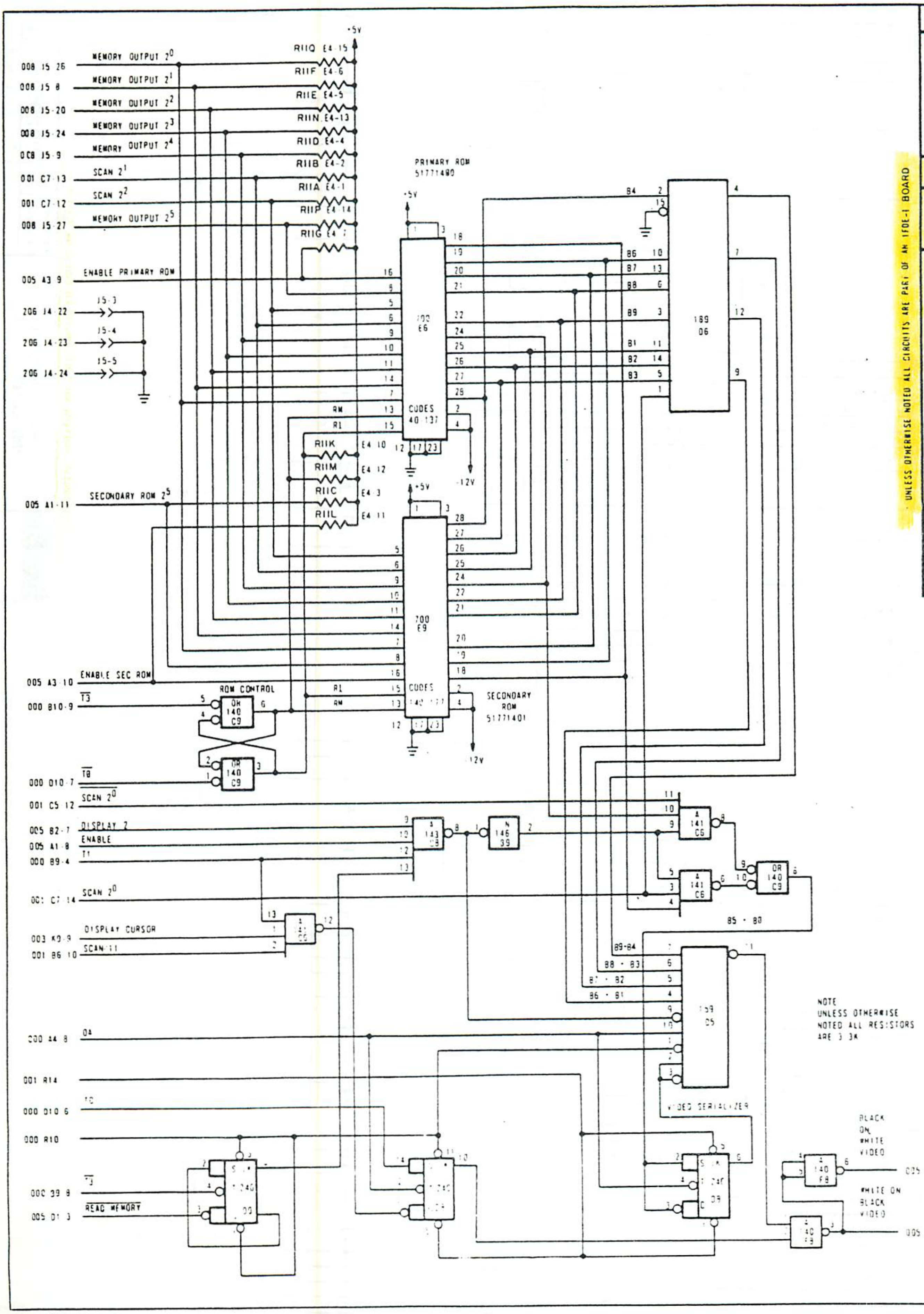
C

DWG NO 82295200

REV B

CROSS REF NO 003

SHEET 6



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF AN 1FDE-1 BOARD

CONTROL DATA

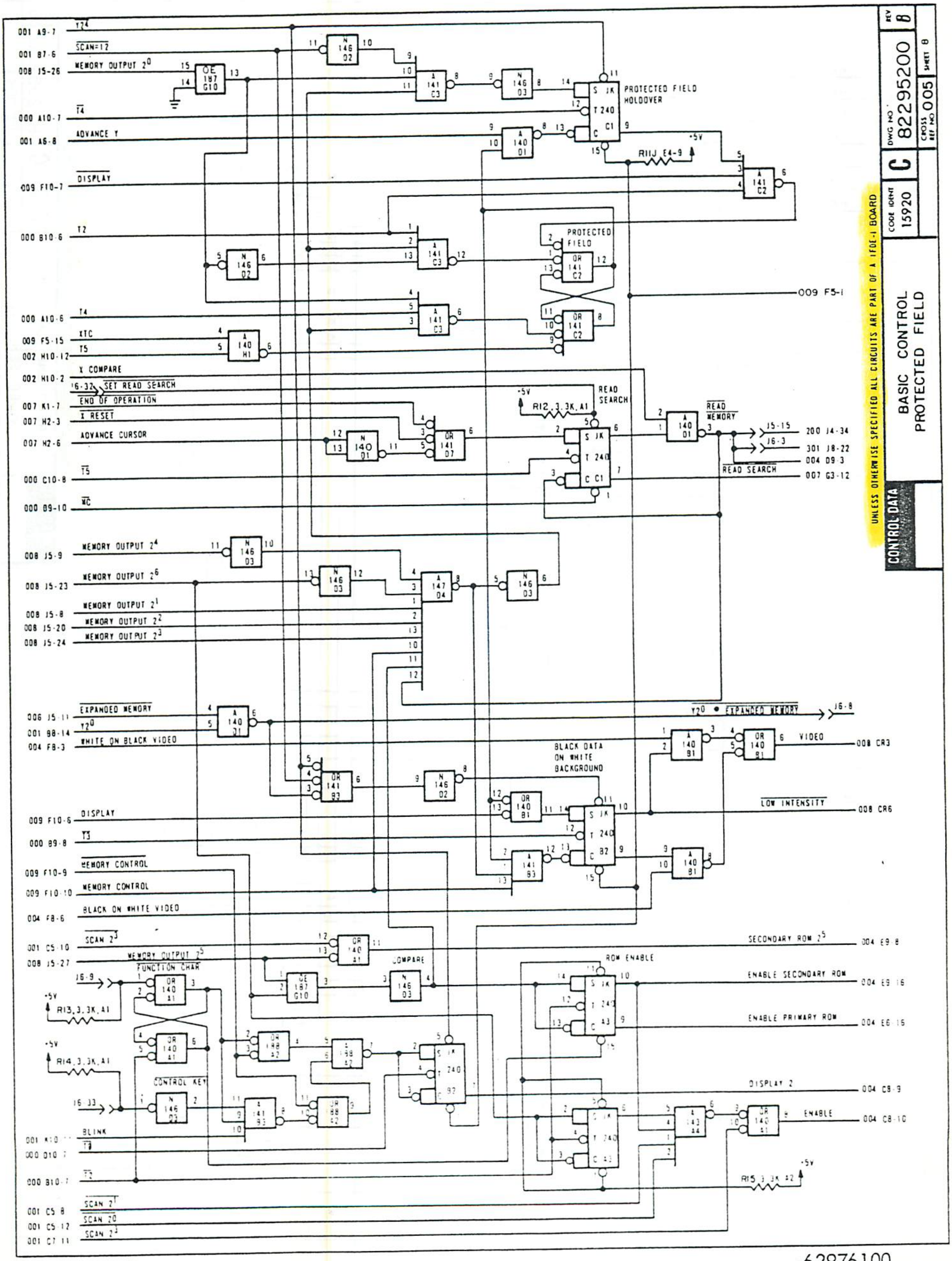
READ ONLY MEMORY
AND
VIDEO SERIALIZER

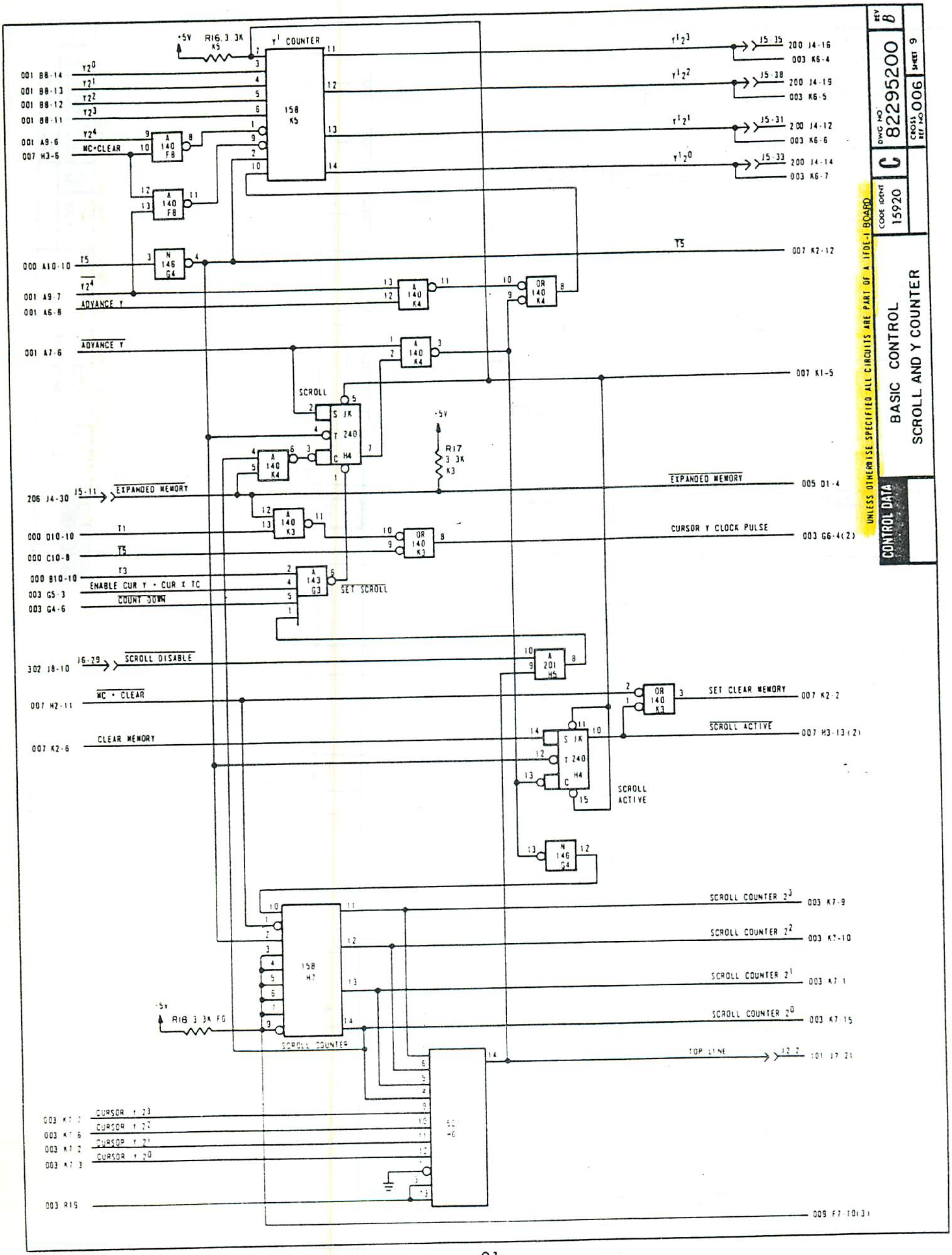
CODE IDENT	DWG NO.	REV
15920	82295200	B

C

CROSS REF NO 004

SHEET 7


BASIC CONTROL
PROTECTED FIELD
CONTROL DATA
UNLESS OTHERWISE SPECIFIED ALL CIRCUITS ARE PART OF A 1FOE-1 BOARD
CODE IDENT 15920
C
DWG NO 82295200
REV B
CROSS REF NO 005
SHEET 8
001 A9-7 T2⁴
001 B7-6 SCAN=12
008 J5-26 MEMORY OUTPUT 2⁰
000 A10-7 T4
001 A6-8 ADVANCE Y
009 F10-7 DISPLAY
000 B10-6 T2
000 A10-6 T4
009 F5-15 XTC
002 H10-12 T5
002 H10-2 X COMPARE
J6-32 SET READ SEARCH
007 K1-7 END OF OPERATION
007 H2-3 X RESET
007 H2-6 ADVANCE CURSOR
000 C10-8 T5
000 B9-10 MC
008 J5-9 MEMORY OUTPUT 2⁴
008 J5-23 MEMORY OUTPUT 2⁶
008 J5-8 MEMORY OUTPUT 2¹
008 J5-20 MEMORY OUTPUT 2²
008 J5-24 MEMORY OUTPUT 2³
006 J5-11 EXPANDED MEMORY
001 B8-14 Y2⁰
004 F8-3 WHITE ON BLACK VIDEO
009 F10-6 DISPLAY
000 B9-8 T3
009 F10-9 MEMORY CONTROL
009 F10-10 MEMORY CONTROL
004 F8-6 BLACK ON WHITE VIDEO
001 C5-10 SCAN 2³
008 J5-27 MEMORY OUTPUT 2⁵
FUNCTION CHAR
J6-9
+5V
R13, 3.3K, A1
R14, 3.3K, A1
CONTROL KEY
J6-33
001 K10 BLINK
000 D10-7 T8
000 B10-7 T2
001 C5-8 SCAN 2¹
001 C5-12 SCAN 2⁰
001 C7-11 SCAN 2²
PROTECTED FIELD HOLDOVER
R11J E4-9
PROTECTED FIELD
009 F5-1
R12, 3.3K, A1
READ SEARCH
READ MEMORY
J5-15 200 J4-34
J6-3 301 J8-22
004 D9-3
READ SEARCH 007 G3-12
Y2⁰ • EXPANDED MEMORY J6-8
VIDEO 008 CR3
BLACK DATA ON WHITE BACKGROUND
LOW INTENSITY 008 CR6
SECONDARY ROM 2⁵ 004 E9-8
ROM ENABLE
COMPARE
ENABLE SECONDARY ROM 004 E9-16
ENABLE PRIMARY ROM 004 E6-15
DISPLAY 2 004 C8-9
ENABLE 004 C8-10
R15, 3.3K, A2

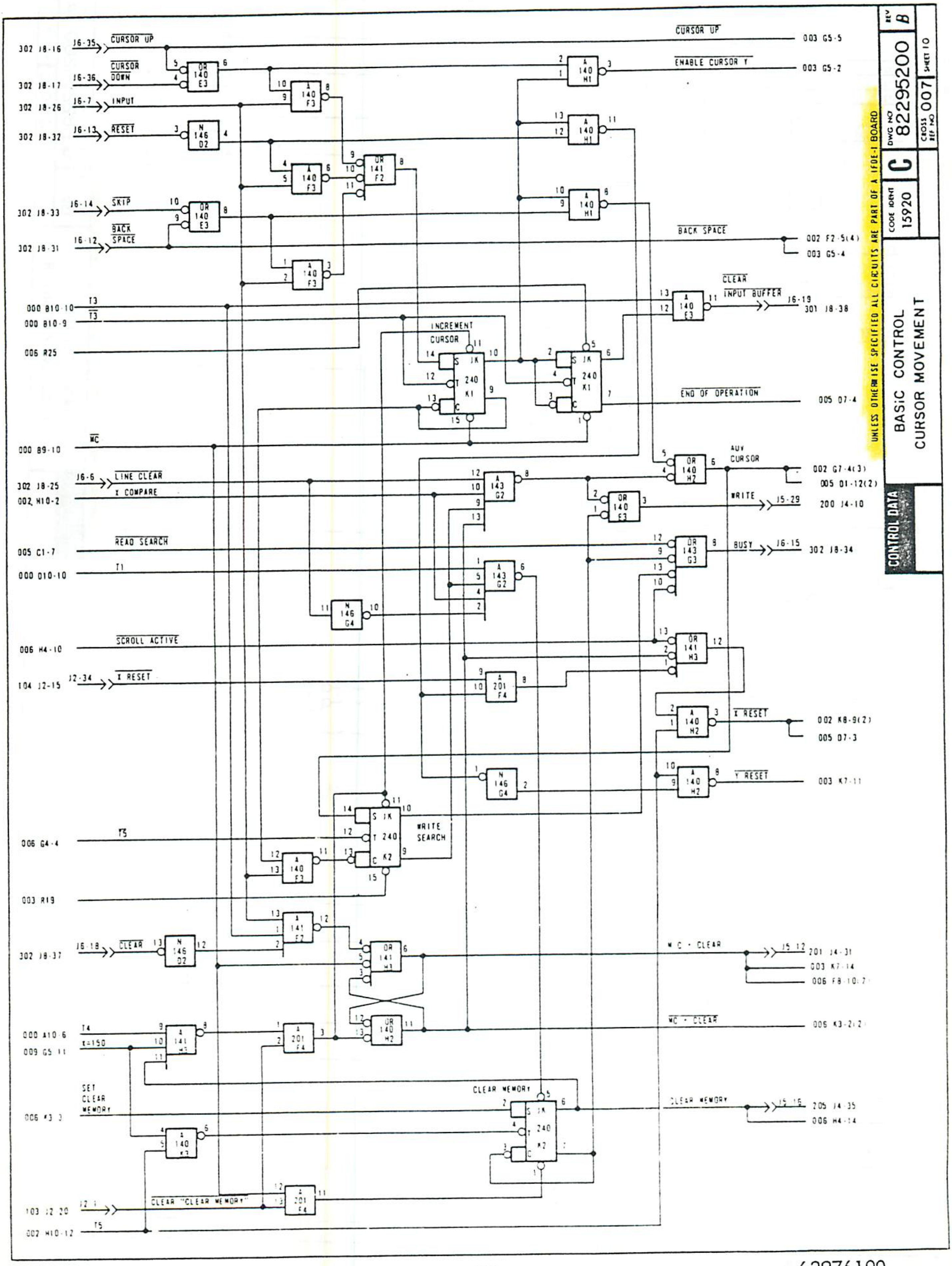


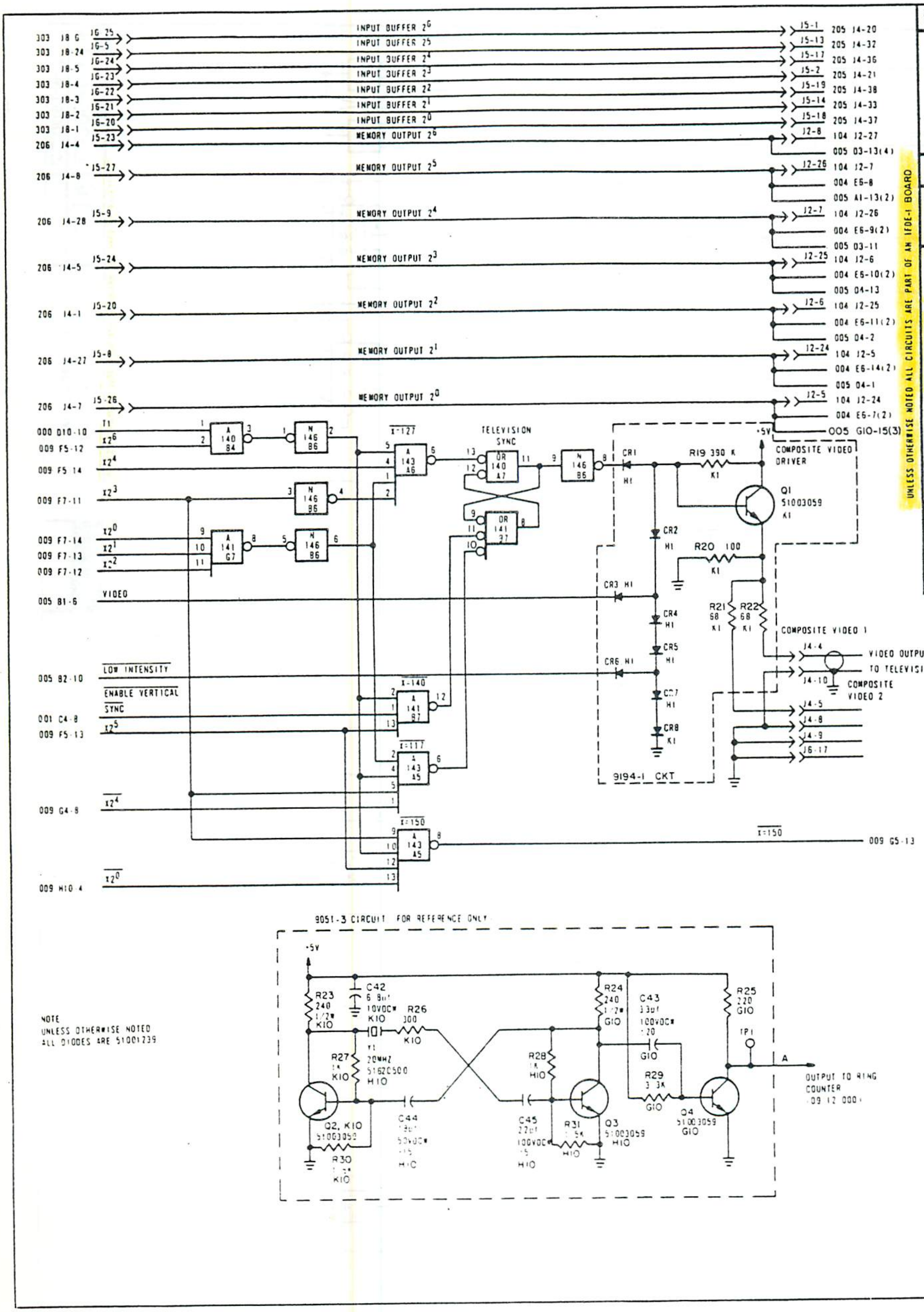
UNLESS OTHERWISE SPECIFIED ALL CIRCUITS ARE PART OF A 1FDE-1 BOARD

CONTROL DATA

BASIC CONTROL
SCROLL AND Y COUNTER

CODE IDENT 15920
C
DWG NO 82295200
REV B
CROSS REF NO 006
SHEET 9


CONTROL DATA
BASIC CONTROL
CURSOR MOVEMENT
UNLESS OTHERWISE SPECIFIED ALL CIRCUITS ARE PART OF A IFOE-1 BOARD
CODE IDENT 15920
C
DWG NO 82295200
CROSS REF NO 007
SHEET 10
REV B
302 J8-16 J6-35 CURSOR UP
302 J8-17 J6-36 CURSOR DOWN
302 J8-26 J6-7 INPUT
302 J8-32 J6-13 RESET
302 J8-33 J6-14 SKIP
302 J8-31 J6-12 BACK SPACE
000 B10-10 T3
000 B10-9 T3
006 R25
000 B9-10 MC
302 J8-25 J6-6 LINE CLEAR
002 H10-2 X COMPARE
005 C1-7 READ SEARCH
000 D10-10 T1
006 H4-10 SCROLL ACTIVE
104 J2-15 J2-34 X RESET
006 G4-4 T5
003 R19
302 J8-37 J6-18 CLEAR
000 A10-6 T4
009 G5-11 X=150
006 F3-3 SET CLEAR MEMORY
103 J2-20 J2-1 CLEAR "CLEAR MEMORY"
002 H10-12 T5
CURSOR UP 003 G5-5
ENABLE CURSOR Y 003 G5-2
BACK SPACE 002 F2-5(4) 003 G5-4
CLEAR INPUT BUFFER J6-19 301 J8-38
INCREMENT CURSOR
END OF OPERATION 005 D7-4
AUX CURSOR 002 G7-4(3) 005 D1-12(2)
WRITE J5-29 200 J4-10
BUSY J6-15 302 J8-34
X RESET 002 K8-9(2) 005 D7-3
Y RESET 003 K7-11
WRITE SEARCH
MC + CLEAR J5-12 201 J4-31 003 K7-14 006 F8-10(2)
MC + CLEAR 005 K3-2(2)
CLEAR MEMORY
CLEAR MEMORY J5-16 205 J4-35 006 H4-14



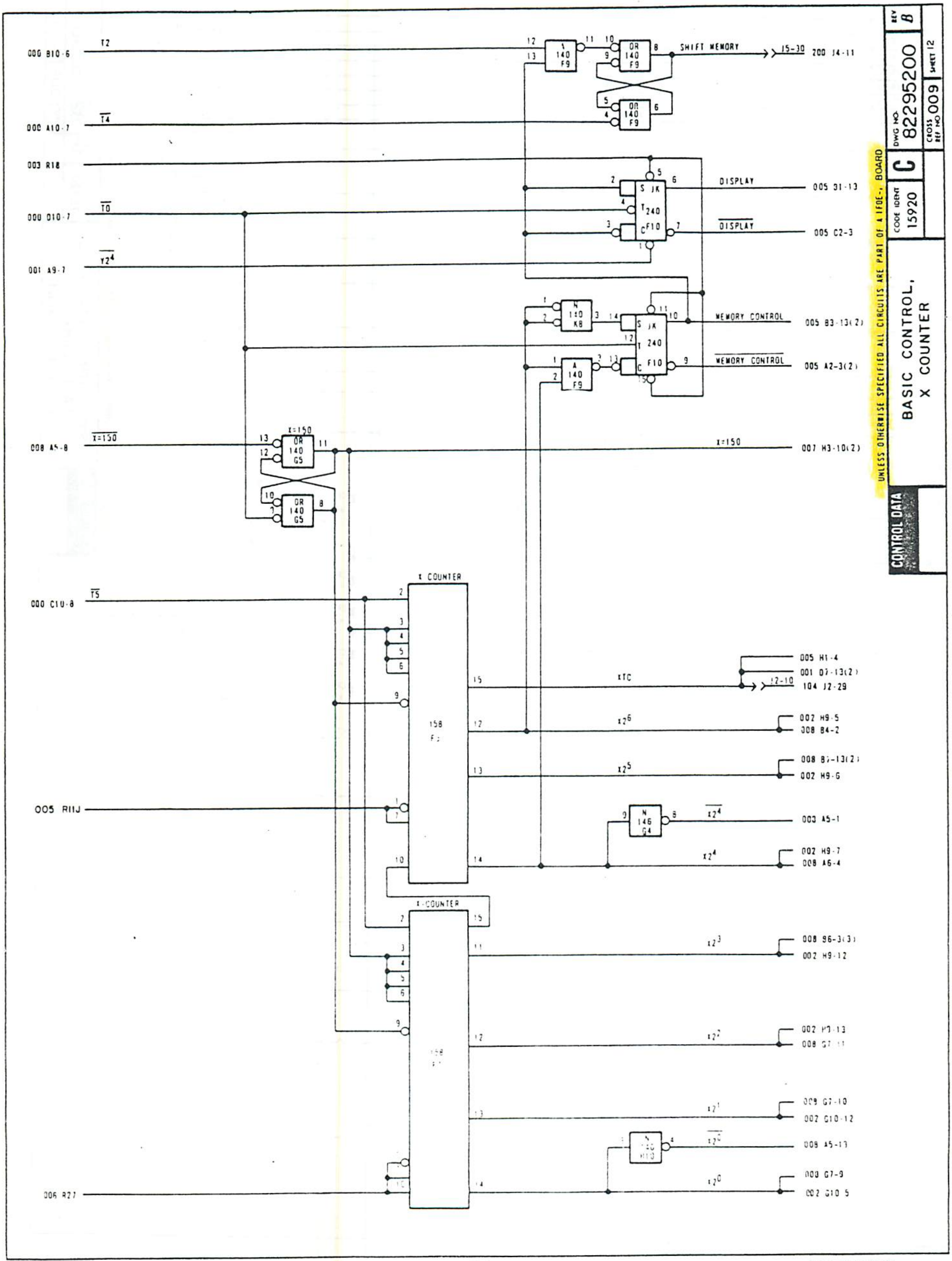
NOTE
UNLESS OTHERWISE NOTED
ALL DIODES ARE 51001239

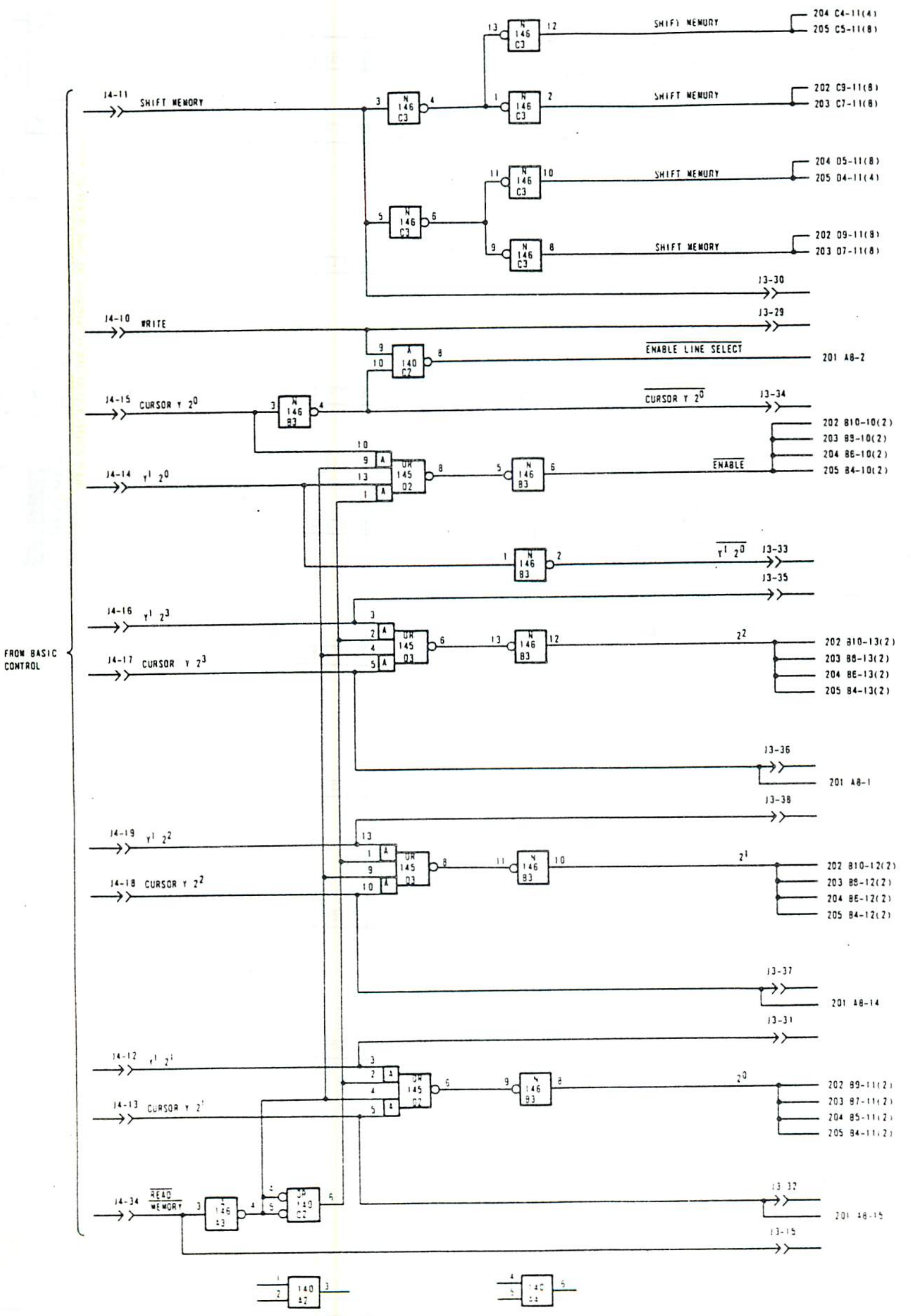
UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF AN IFDE-1 BOARD

CONTROL DATA

BASIC CONTROL DATA PATHS,
BASIC CONTROL
CURSOR MOVEMENT

SIZE	CODE IDENT	DWG NO	REV
C	15920	82295200	B
		CROSS REF NO 008	SHEET 11


000 B10-6
T2
000 A10-7
$\overline{T4}$
003 R18
000 D10-7
$\overline{T0}$
001 A9-7
$\overline{Y2^4}$
008 A5-8
$\overline{X=150}$
000 C10-8
$\overline{T5}$
005 R11J
006 R27
140 F9
OR 140 F9
SHIFT MEMORY
15-30
200 J4-11
S JK T 240 C F10
DISPLAY
005 D1-13
$\overline{DISPLAY}$
005 C2-3
N 140 K8
A 140 F9
S JK T 240 C F10
MEMORY CONTROL
005 B3-13(2)
$\overline{MEMORY CONTROL}$
005 A2-3(2)
X=150
OR 140 G5
X=150
007 H3-10(2)
X COUNTER
158
XTC
005 H1-4
001 D7-13(2)
12-10
104 J2-29
$X2^6$
002 H9-5
008 B4-2
$X2^5$
008 B7-13(2)
002 H9-6
N 146 G4
$\overline{X2^4}$
003 A5-1
$X2^4$
002 H9-7
008 A6-4
X COUNTER
$X2^3$
008 B6-3(3)
002 H9-12
$X2^2$
002 F7-13
008 G7-11
$X2^1$
008 G7-10
002 G10-12
$\overline{X2^0}$
008 A5-13
$X2^0$
008 G7-9
002 G10-5
UNLESS OTHERWISE SPECIFIED ALL CIRCUITS ARE PART OF A 1FOE-, BOARD
CONTROL DATA
BASIC CONTROL, X COUNTER
CODE IDENT 15920
C
DWG NO. 82295200
REV B
CROSS REF NO 009
SHEET 12



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A OJHD BOARD

CONTROL DATA

BASIC
MEMORY CONTROL
8 LINES

CODE IDENT 15920

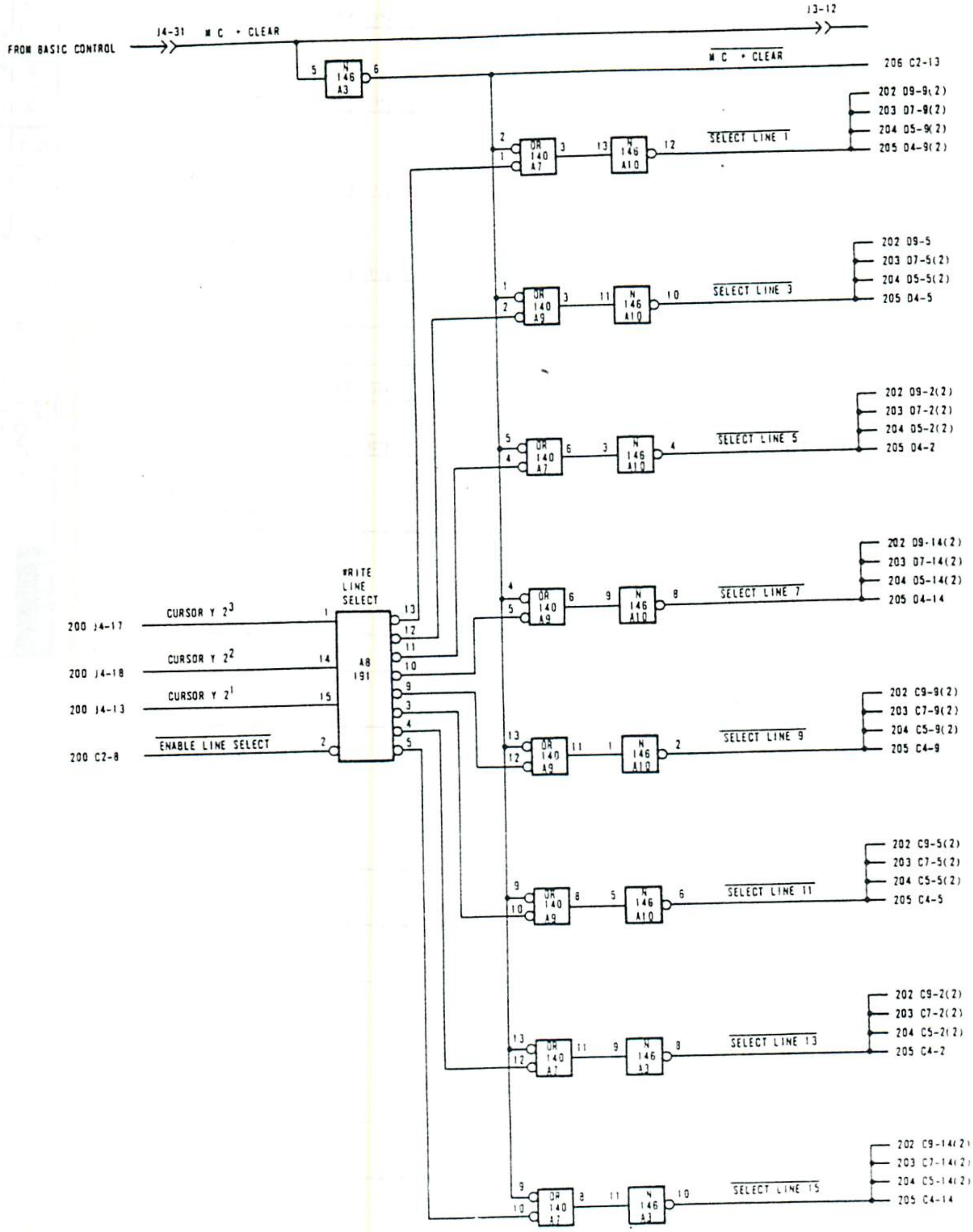
C

DWG NO 82295200

REV A

CROSS REF NO 200

SHEET 13



NOTE BASIC MEMORY DISPLAYS DATA ON LINE POSITIONS 1 3 5 7 9 11 13 15$_{10}$

EXPANDED MEMORY WILL DISPLAY DATA IN LINE POSITIONS 2 4 6 8 10 12 14 16$_{10}$

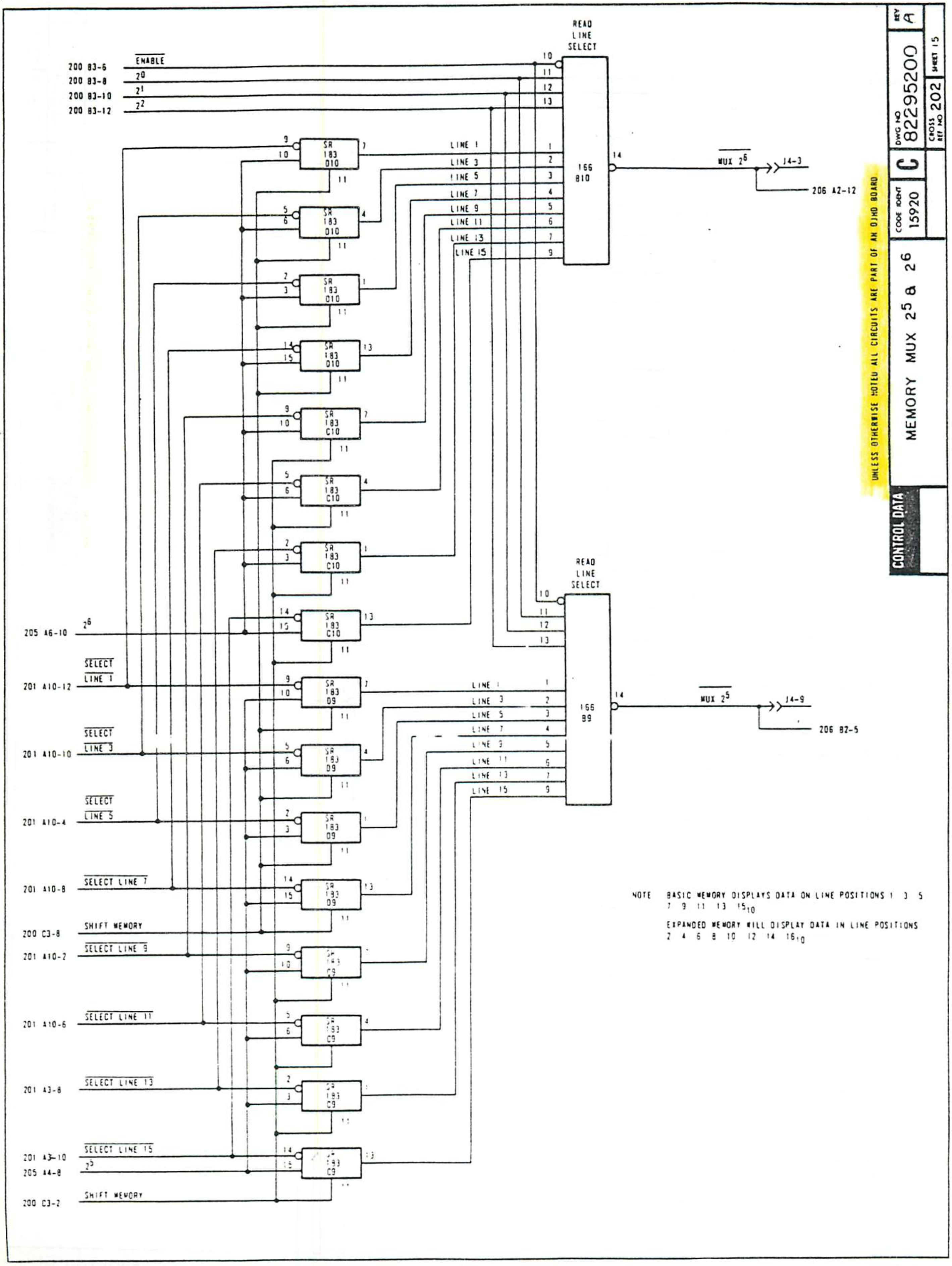
UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A OJHD BOARD LOCATED AT

CONTROL DATA

MEMORY INPUT

CODE IDENT 15920 | C | DWG NO 82295200 | REV A

CROSS REF NO 201 | SHEET 14



NOTE BASIC MEMORY DISPLAYS DATA ON LINE POSITIONS 1 3 5 7 9 11 13 15_{10}

EXPANDED MEMORY WILL DISPLAY DATA IN LINE POSITIONS 2 4 6 8 10 12 14 16_{10}

UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF AN OJHD BOARD

CONTROL DATA

MEMORY MUX 2^5 & 2^6

CODE IDENT 15920

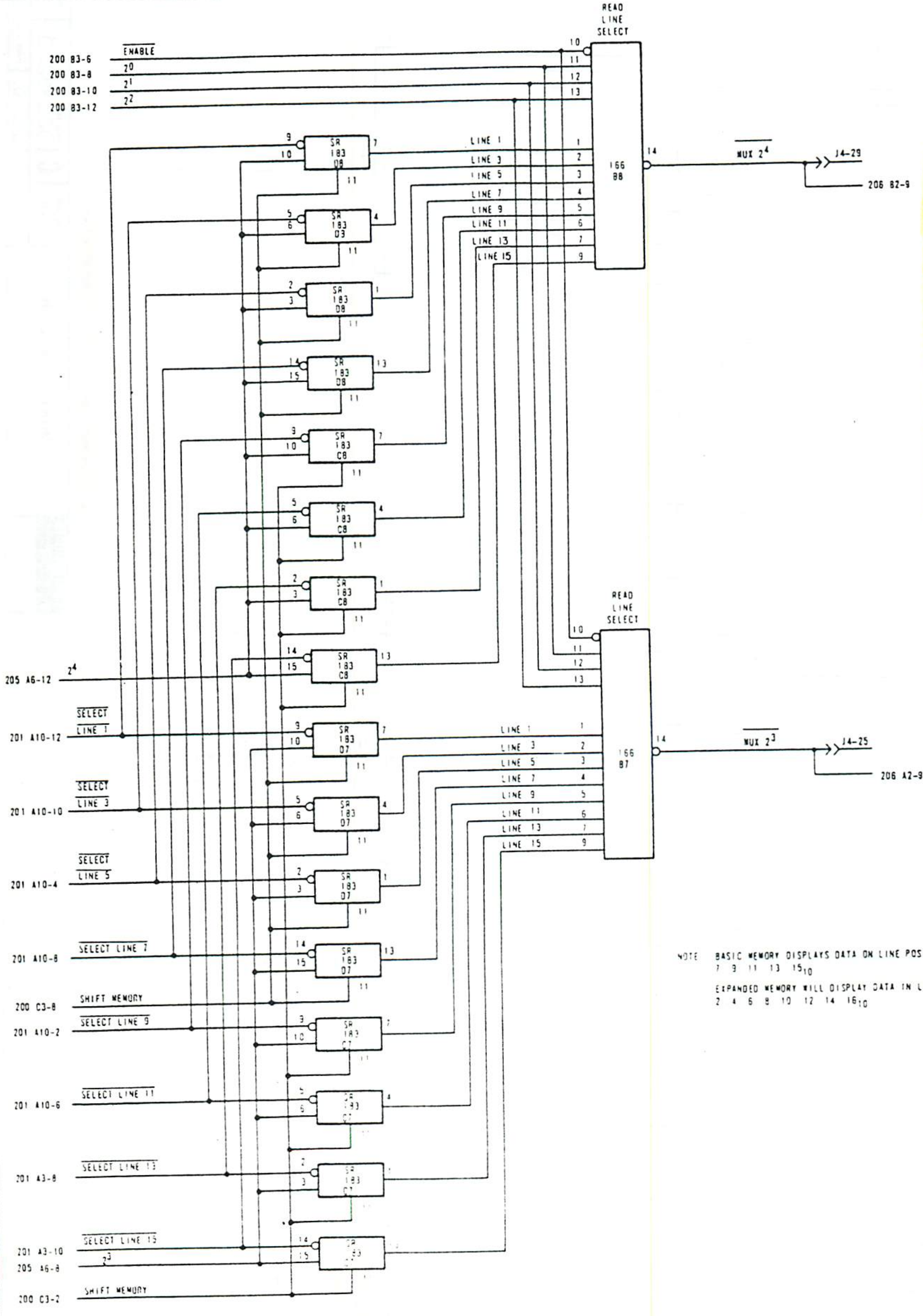
C

DWG NO 82295200

CROSS REF NO 202

SHEET 15

REV A



NOTE BASIC MEMORY DISPLAYS DATA ON LINE POSITIONS 1 3 5 7 9 11 13 15_{10}

EXPANDED MEMORY WILL DISPLAY DATA IN LINE POSITIONS 2 4 6 8 10 12 14 16_{10}

UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF AN OJHO BOARD

CONTROL DATA

MEMORY MUX 2^3 & 2^4

CODE IDENT 15920

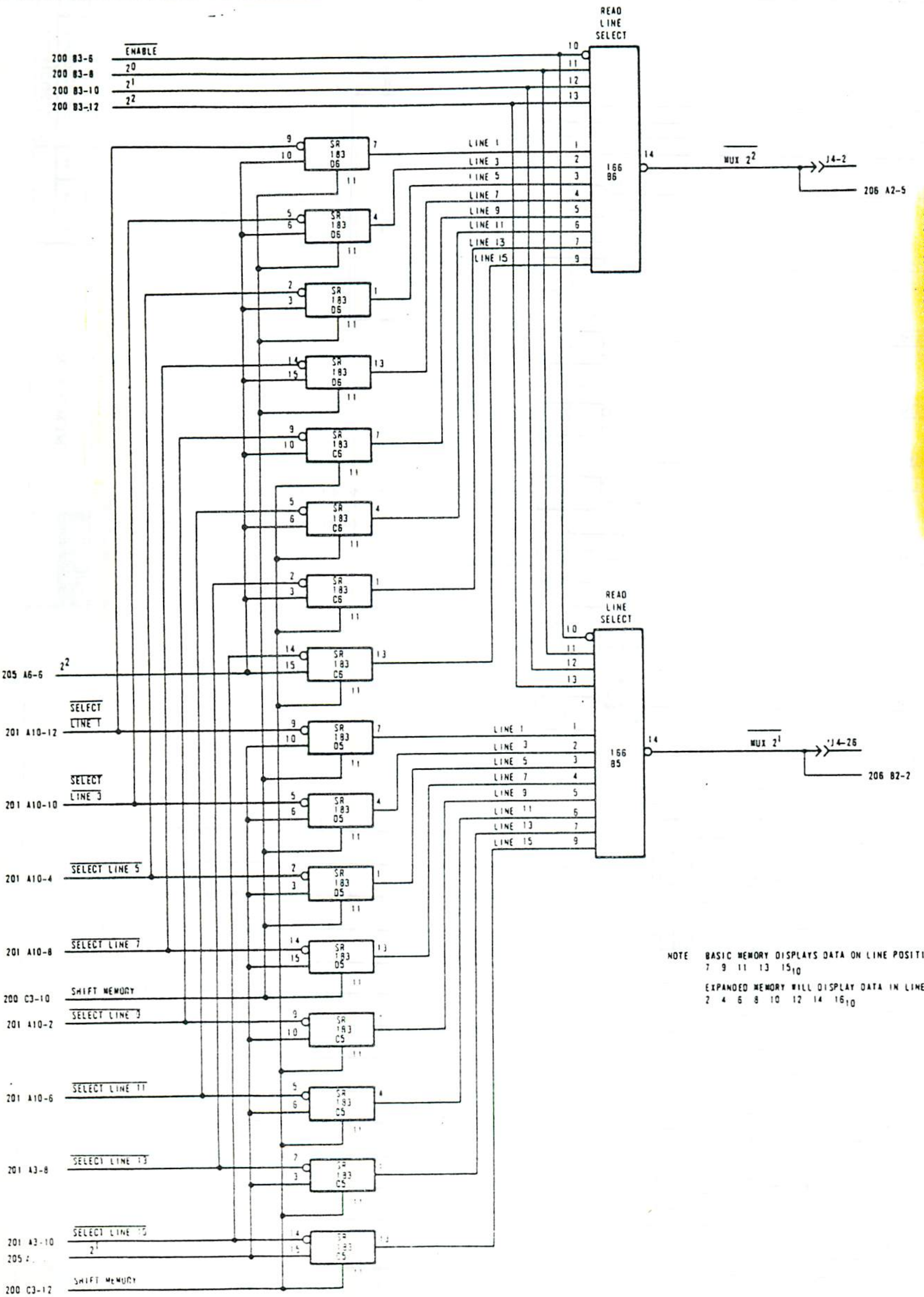
C

DWG NO 82295200

REV A

CROSS REF NO 203

SHEET 16



NOTE BASIC MEMORY DISPLAYS DATA ON LINE POSITIONS 1 3 5 7 9 11 13 15_{10}

EXPANDED MEMORY WILL DISPLAY DATA IN LINE POSITIONS 2 4 6 8 10 12 14 16_{10}

UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF AN OJHD

CONTROL DATA

MEMORY MUX 2^1 & 2^2

CODE IDENT 15920

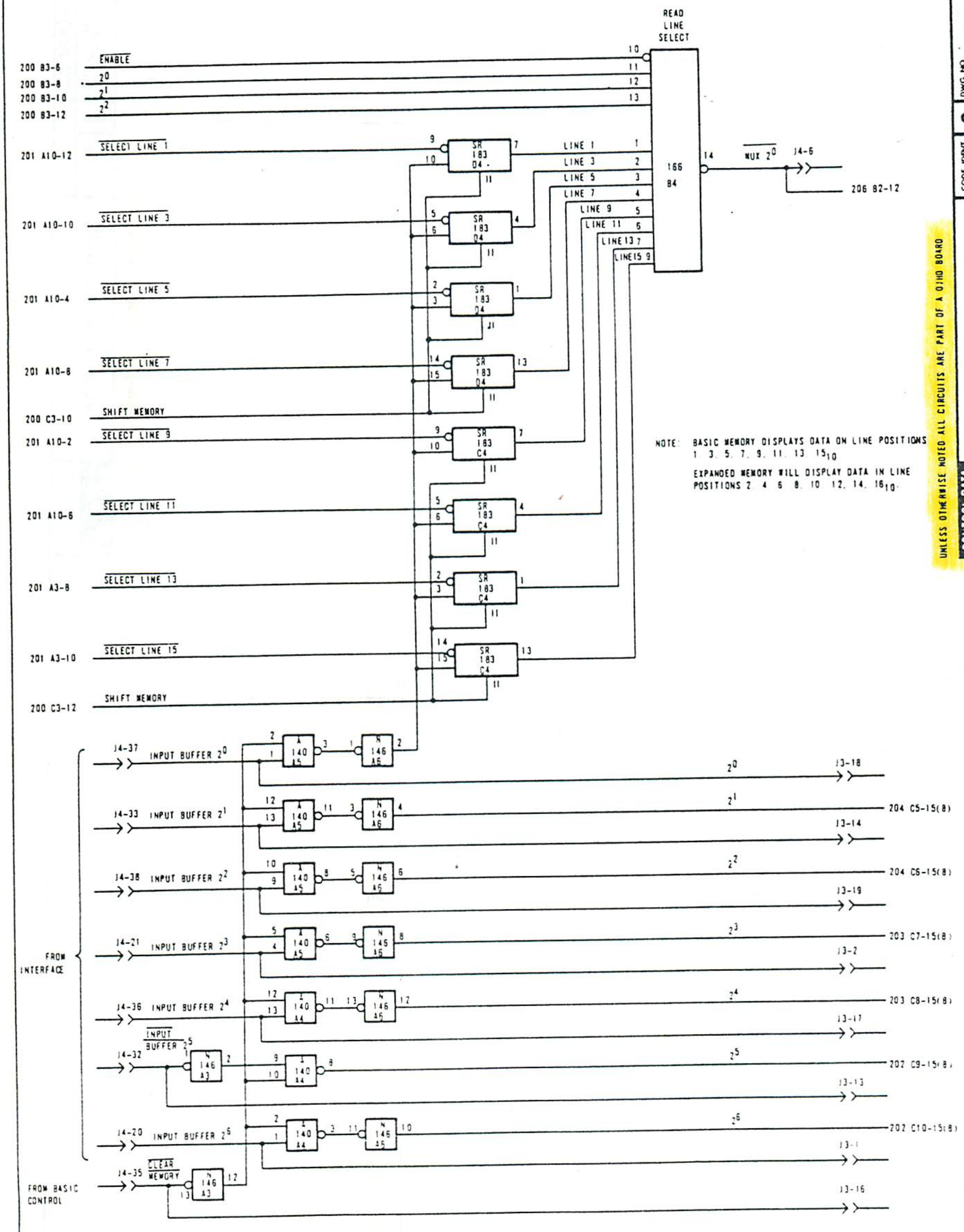
C

DWG NO 82295200

CROSS REF NO 204

SHEET 17

REV A



NOTE: BASIC MEMORY DISPLAYS DATA ON LINE POSITIONS 1, 3, 5, 7, 9, 11, 13, 15_{10}

EXPANDED MEMORY WILL DISPLAY DATA IN LINE POSITIONS 2, 4, 6, 8, 10, 12, 14, 16_{10}.

UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 01HO BOARD

CONTROL DATA

MEMORY MUX 2^0

CODE IDENT 15920

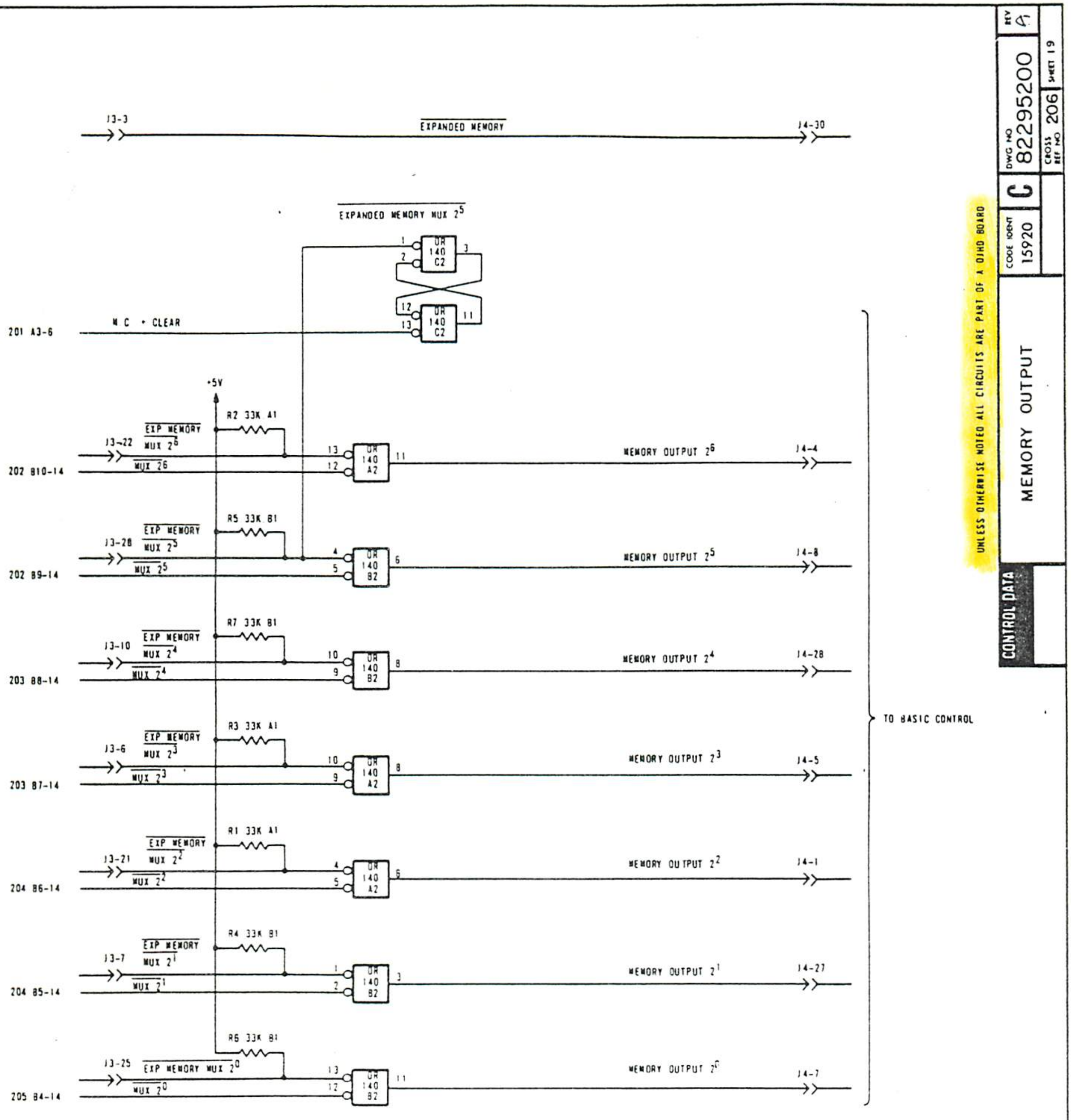
C

DWG NO 82295200

REV A

SHEET 18

CROSS REF NO 205


J3-3
EXPANDED MEMORY
J4-30
EXPANDED MEMORY MUX 2^5
OR 140 C2
201 A3-6
M C + CLEAR
+5V
R2 33K A1
EXP MEMORY MUX 2^6
J3-22
MUX 2^6
202 B10-14
OR 140 A2
MEMORY OUTPUT 2^6
J4-4
R5 33K B1
EXP MEMORY MUX 2^5
J3-28
MUX 2^5
202 B9-14
OR 140 B2
MEMORY OUTPUT 2^5
J4-8
R7 33K B1
EXP MEMORY MUX 2^4
J3-10
MUX 2^4
203 B8-14
OR 140 B2
MEMORY OUTPUT 2^4
J4-28
R3 33K A1
EXP MEMORY MUX 2^3
J3-6
MUX 2^3
203 B7-14
OR 140 A2
MEMORY OUTPUT 2^3
J4-5
R1 33K A1
EXP MEMORY MUX 2^2
J3-21
MUX 2^2
204 B6-14
OR 140 A2
MEMORY OUTPUT 2^2
J4-1
R4 33K B1
EXP MEMORY MUX 2^1
J3-7
MUX 2^1
204 B5-14
OR 140 B2
MEMORY OUTPUT 2^1
J4-27
R6 33K B1
J3-25
EXP MEMORY MUX 2^0
MUX 2^0
205 B4-14
OR 140 B2
MEMORY OUTPUT 2^0
J4-7
TO BASIC CONTROL
REV A
DWG NO 82295200
SHEET 19
CROSS REF NO 206
C
CODE IDENT 15920
UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A OIHD BOARD
MEMORY OUTPUT
CONTROL DATA

SHEET NO	CROSS REFERENCE NUMBER	REV	LOGIC DIAGRAM TITLE
		A	LOGIC DIAGRAM CONTROL SHEET
2	300	A	MASTER CLEAR AND ALARM
3	301	A	BLOCK TRANSFER CONTROL
4	302	A	DISASSEMBLY REGISTER
5	303	A	RECEIVE LOOP CONTROL AND START BIT
6	304	A	WORD LENGTH COUNTER AND SCROLL COUNTER
7	305	A	PRINTER CONTROLS AND FUNCTION DECODER
8	306	A	COMPRESSION MODE CONTROLS
9	307	A	PARITY AND BREAK CHECKERS
10	308	A	BLOCK MODE TRANSFER CONTROLS
11	309	A	REQUEST TO SEND TIME OUT

SHEET REVISION STATUS								REVISION RECORD						
								REV	LO	DESCRIPTION	UNIT	DATE	CHKD	APP
								A	6297-92	RELEASED CLASS A	—	[illegible]	—	[illegible]

SHEET NO	CROSS REFERENCE NUMBER	REV	LOGIC DIAGRAM TITLE

NOTES

1. FOR LOGIC CHIP INFORMATION SEE DRAWING 82297000- KEY TO SYMBOLS
2. TO COMPLETE QSE 14965, REPLACE DIAGRAMS IN LOGIC SET 82295200 WITH CORRESPONDING DIAGRAMS

REFERENCE DRAWING			
COMPONENTS EXCEPT AS NOTED			
	TOLERANCE	VALUE	RATING
RES			
CAP			

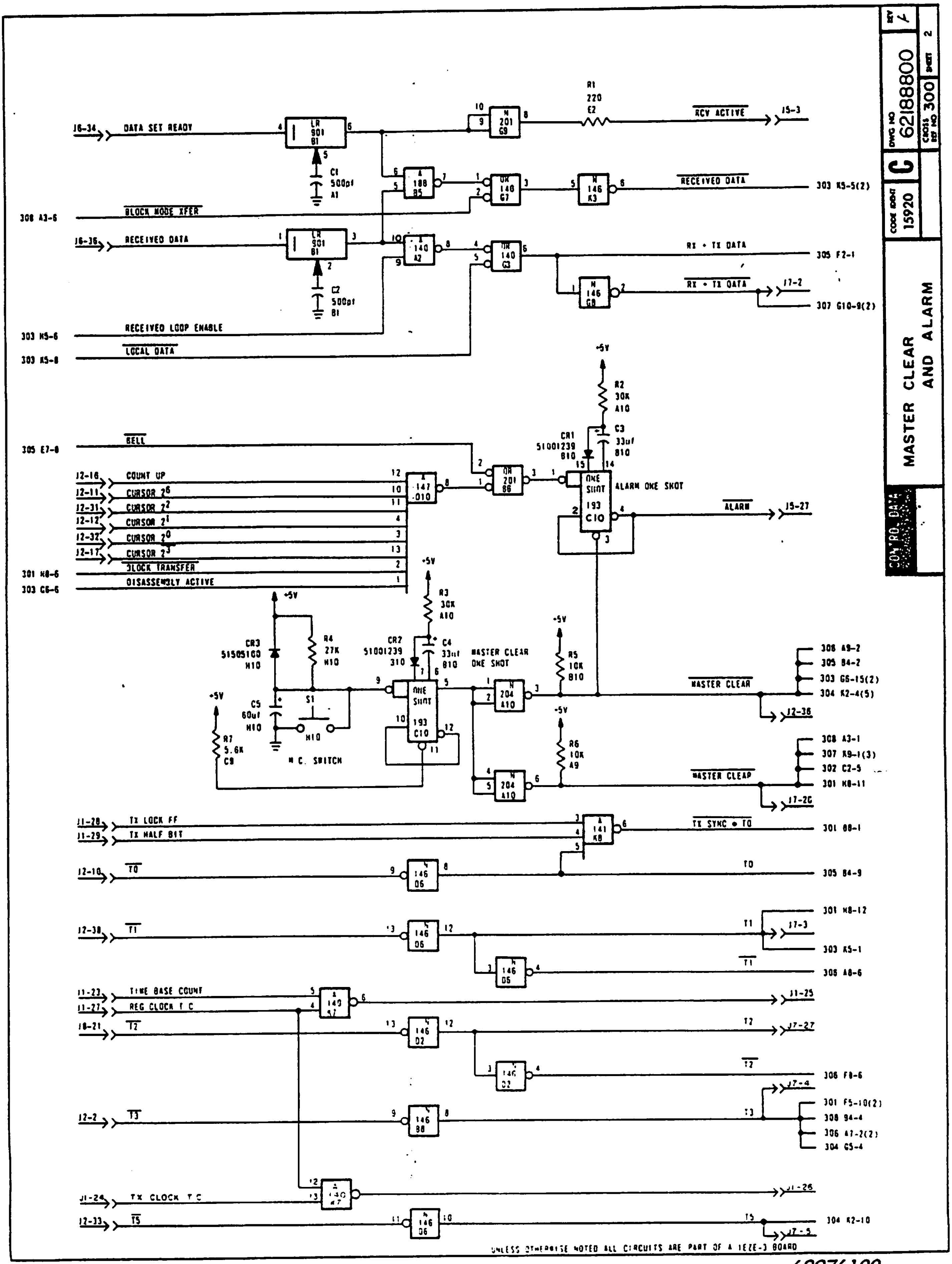
CONTROL DATA

FIRST USED ON	QSE 14965	
DWN	C. CARPENTER	11 26 73
CHKD		11-30-73
ENGR	J. ODonnell	11-30-73
MFG		
APPR	J. ODonnell	11-30-73

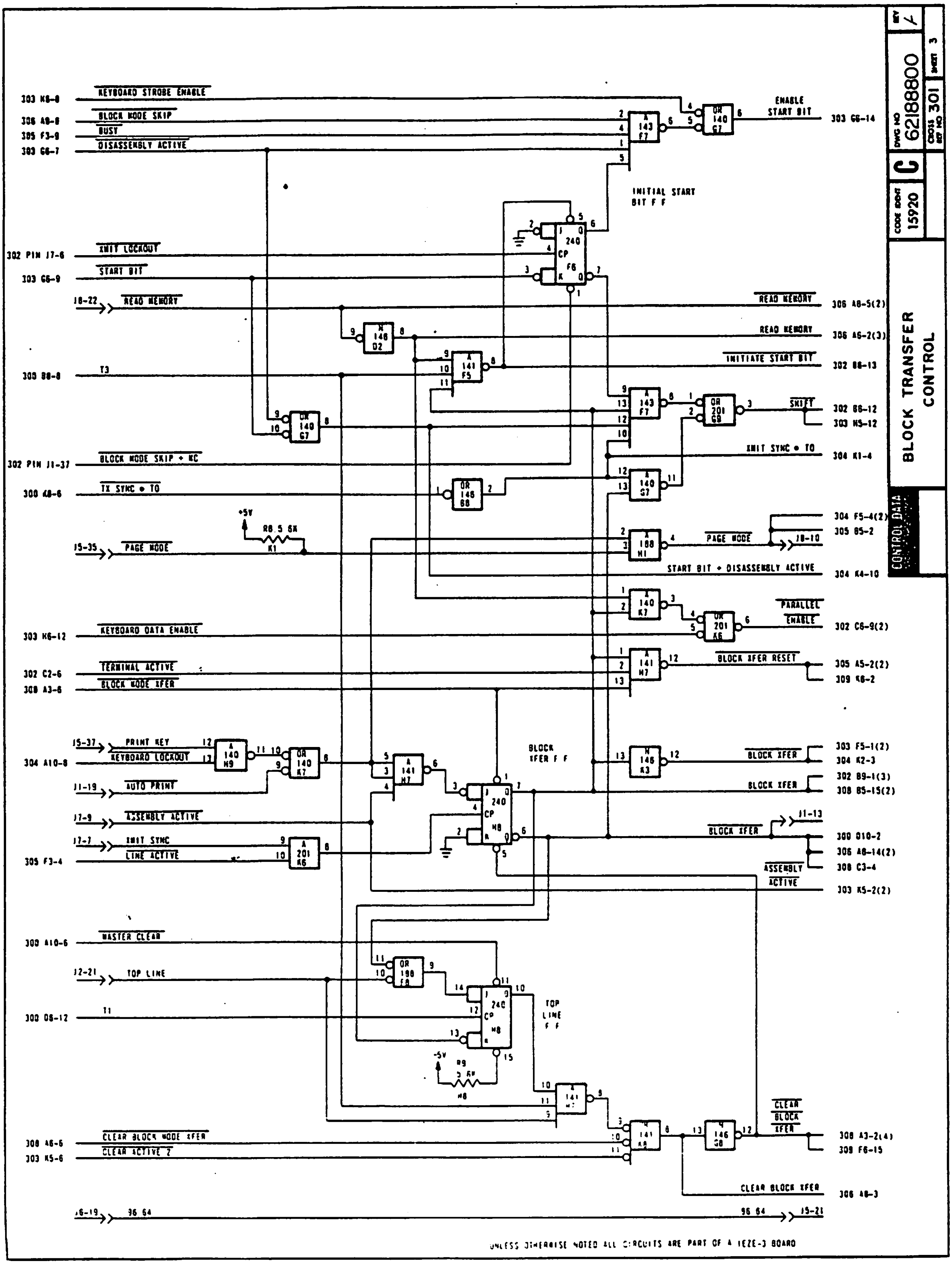
TITLE

LOGIC DIAGRAM
CONTROL SHEET

CODE IDENT 15920	C	DRAWING NO 62188800	
SCALE	CROSS REF NO		SHEET 1 OF 11



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 1EZE-3 BOARD



REV A

DWG NO 62188800

SHEET 3

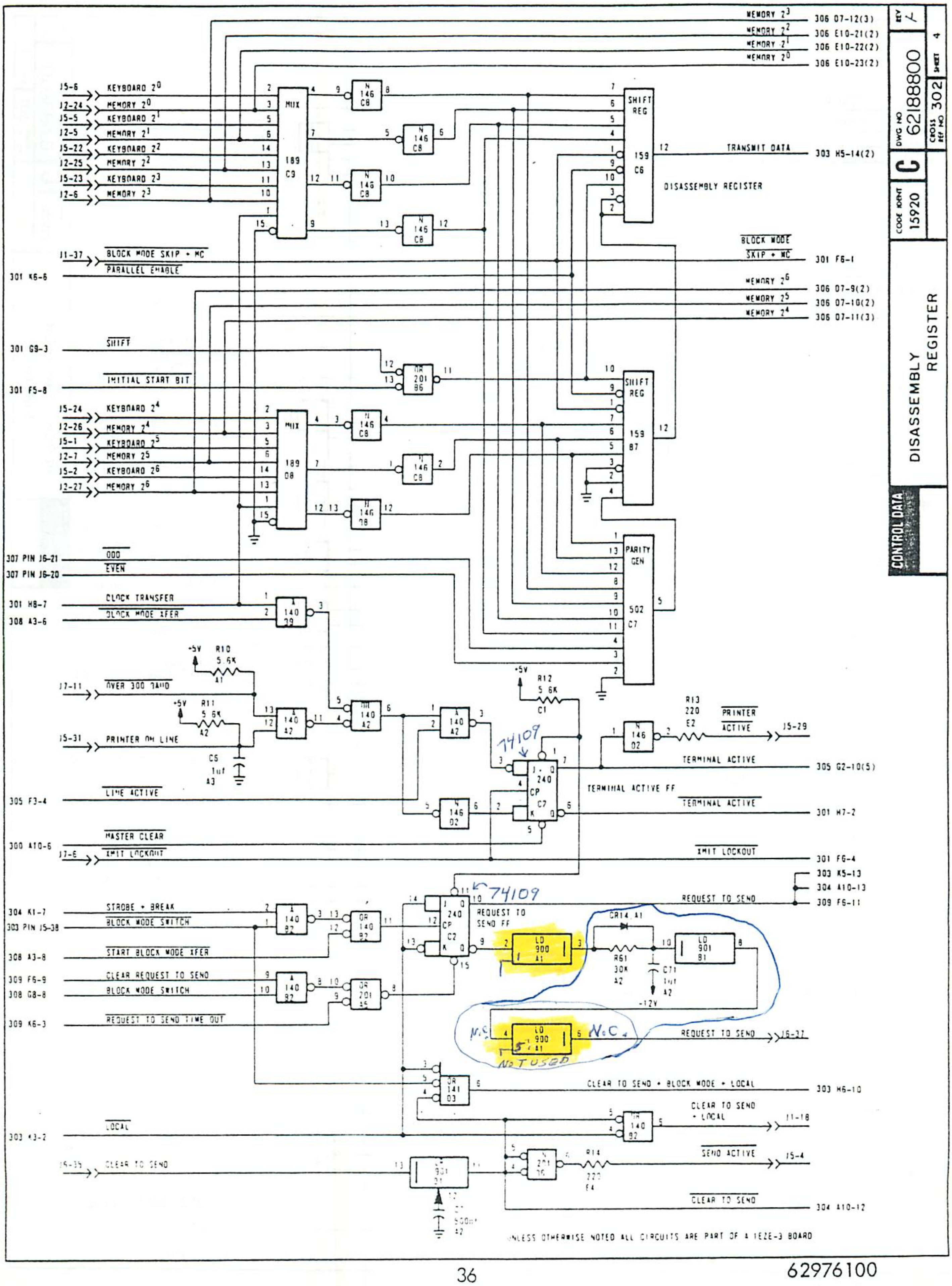
CROSS REF NO 301

C

CODE IDENT 15920

BLOCK TRANSFER CONTROL

CONTROL DATA



DISASSEMBLY REGISTER

CONTROL DATA

CODE IDENT 15920

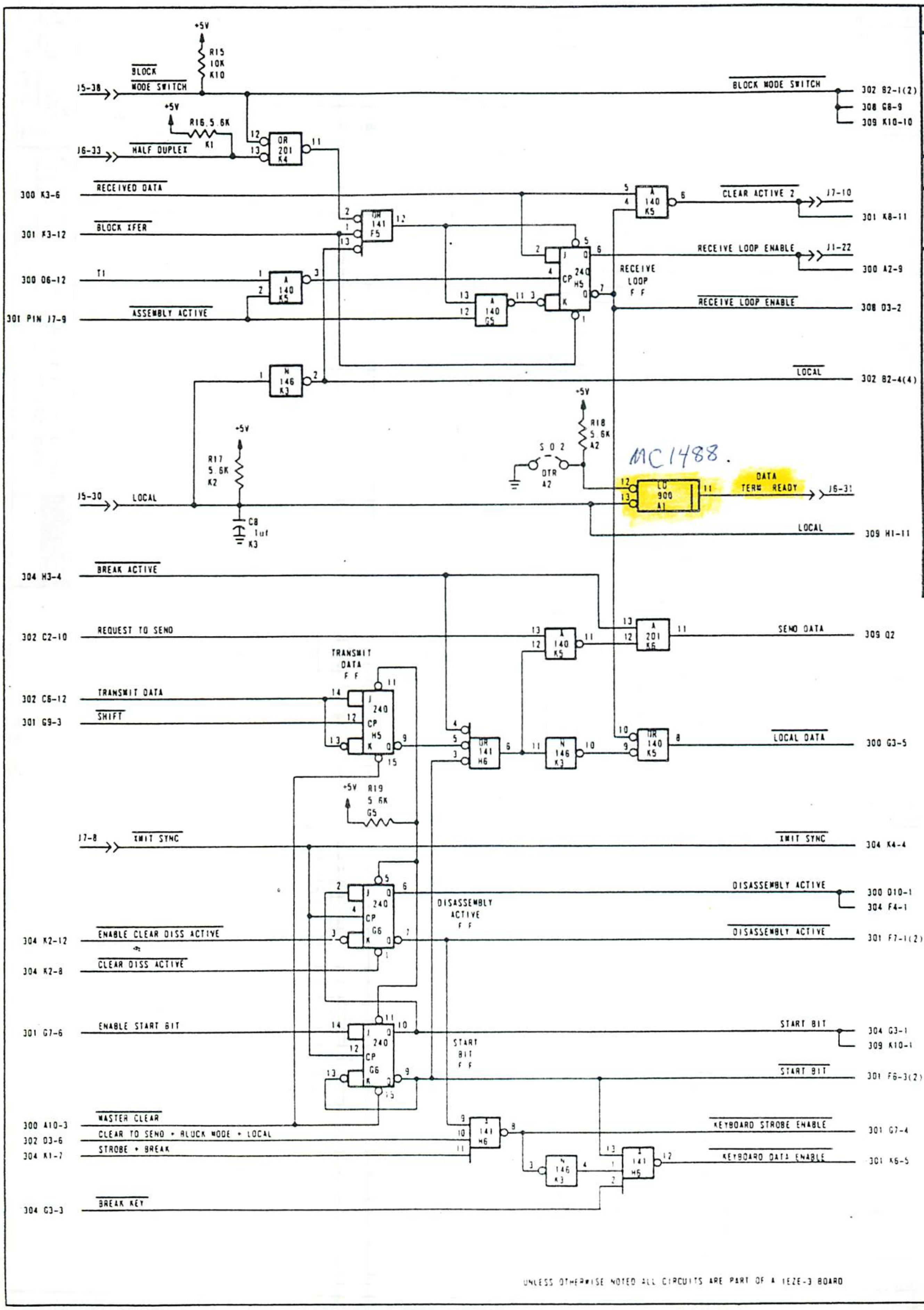
C

DWG NO 62188800

REV A

SHEET 4

CROSS REF NO 302

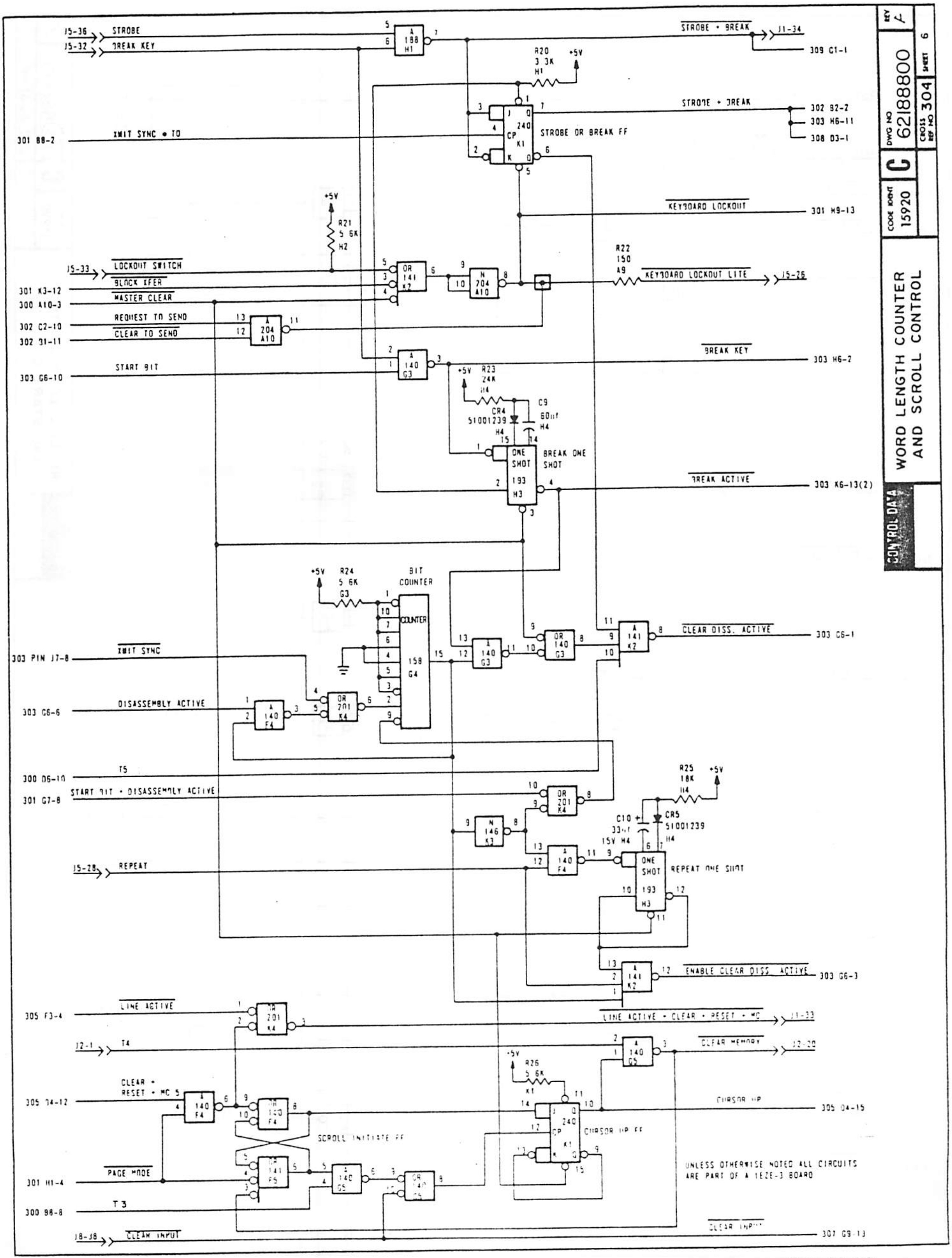


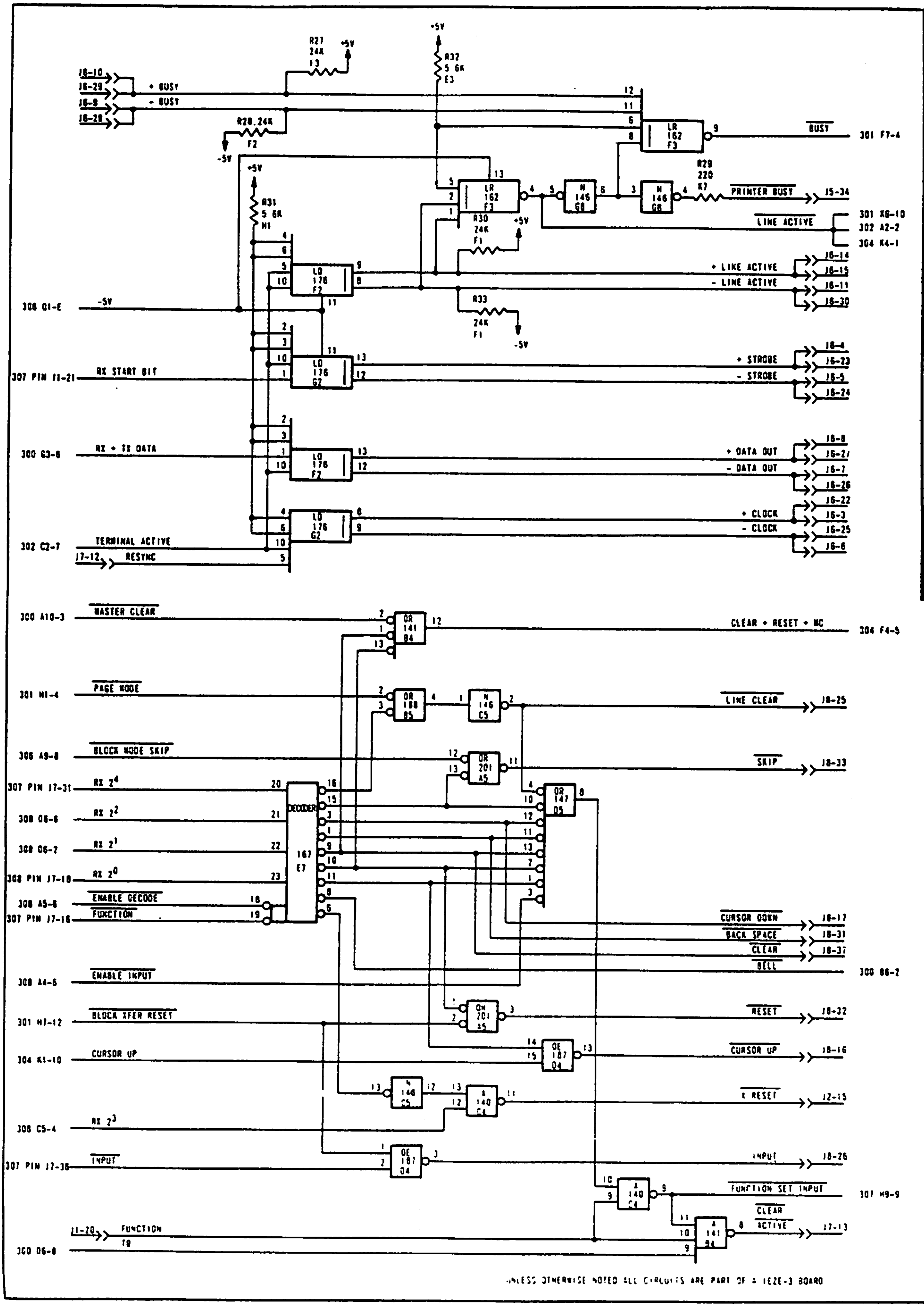
UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A IEZE-3 BOARD

REV A
DWG NO 62188800
SHEET 5
C
CROSS REF NO 303
CODE IDENT 15920

RECEIVE LOOP CONTROL AND START BIT

CONTROL DATA


WORD LENGTH COUNTER AND SCROLL CONTROL
CONTROL DATA
CODE IDENT 15920
C
DWG NO 62188800
CROSS REF NO 304
SHEET 6
KEY A
J5-36 STROBE
J5-32 BREAK KEY
STROBE + BREAK J1-34
309 G1-1
R20 3.3K H1 +5V
STROBE + BREAK
302 B2-2
303 H6-11
308 D3-1
301 B8-2 XMIT SYNC • T0
240 K1 STROBE OR BREAK FF
KEYBOARD LOCKOUT 301 H9-13
+5V R21 5.6K H2
R22 150 A9
J5-33 LOCKOUT SWITCH
301 K3-12 BLOCK XFER
300 A10-3 MASTER CLEAR
KEYBOARD LOCKOUT LITE J5-26
302 C2-10 REQUEST TO SEND
302 B1-11 CLEAR TO SEND
BREAK KEY 303 H6-2
303 G6-10 START BIT
+5V R23 24K H4
CR4 51001239 H4
C9 60μf H4
ONE SHOT 193 H3 BREAK ONE SHOT
BREAK ACTIVE 303 K6-13(2)
+5V R24 5.6K G3
BIT COUNTER
COUNTER 158 G4
303 PIN J7-8 XMIT SYNC
303 G6-6 DISASSEMBLY ACTIVE
CLEAR DISS. ACTIVE 303 G6-1
300 D6-10 T5
301 G7-8 START BIT + DISASSEMBLY ACTIVE
R25 18K H4 +5V
C10 33μf 15V H4
CR5 51001239 H4
ONE SHOT 193 H3 REPEAT ONE SHOT
J5-28 REPEAT
ENABLE CLEAR DISS. ACTIVE 303 G6-3
305 F3-4 LINE ACTIVE
LINE ACTIVE + CLEAR + RESET + MC J1-33
J2-1 T4
CLEAR MEMORY J2-20
305 D4-12 CLEAR + RESET + MC.5
+5V R26 5.6K K1
SCROLL INITIATE FF
240 K1 CURSOR UP FF
CURSOR UP 305 D4-15
301 H1-4 PAGE MODE
300 B8-8 T3
J8-J8 CLEAR INPUT
CLEAR INPUT 307 G9-13
UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 1EZE-3 BOARD



PRINTER CONTROLS AND FUNCTION DECODER

CONTROL DATA

CODE IDENT 15920

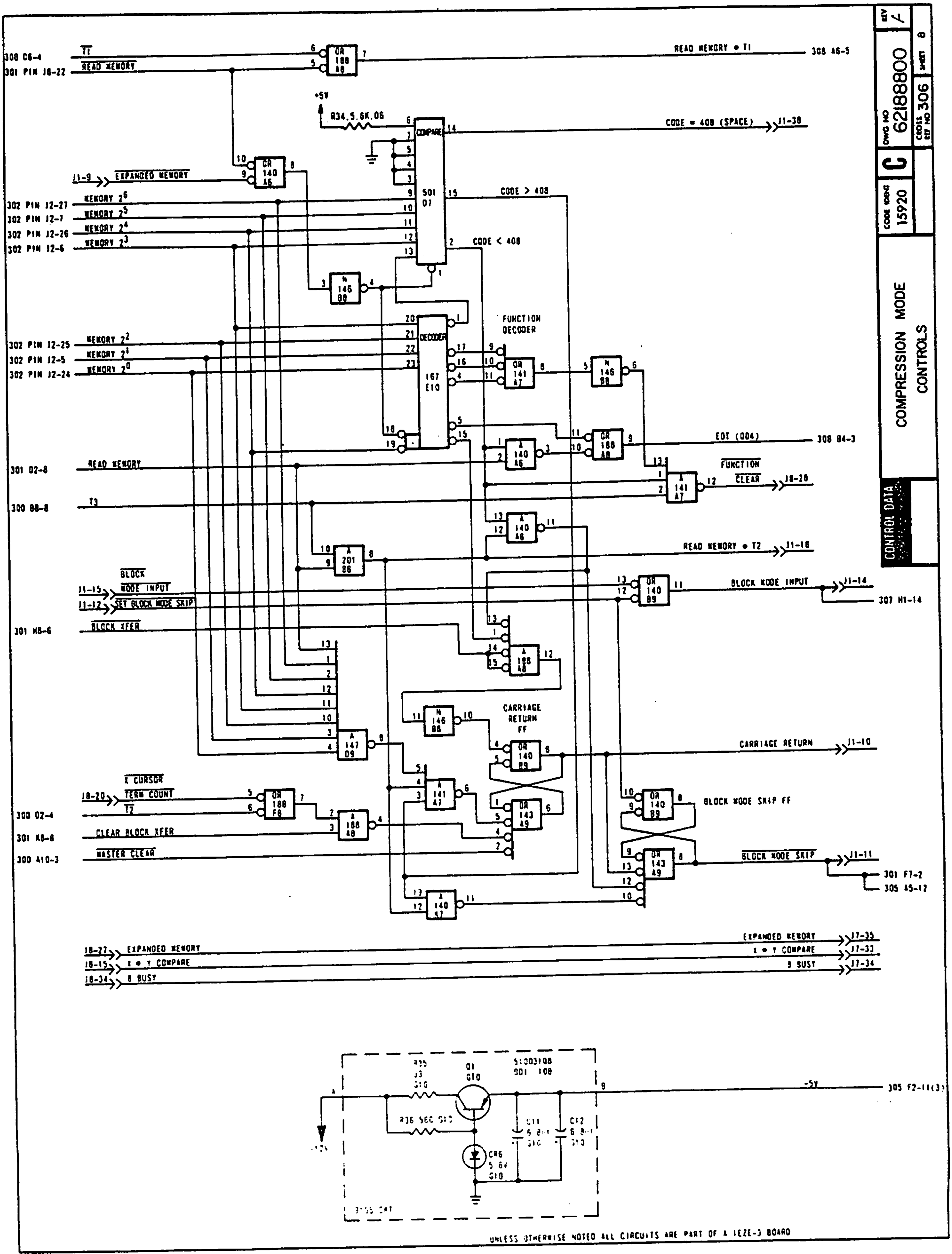
C

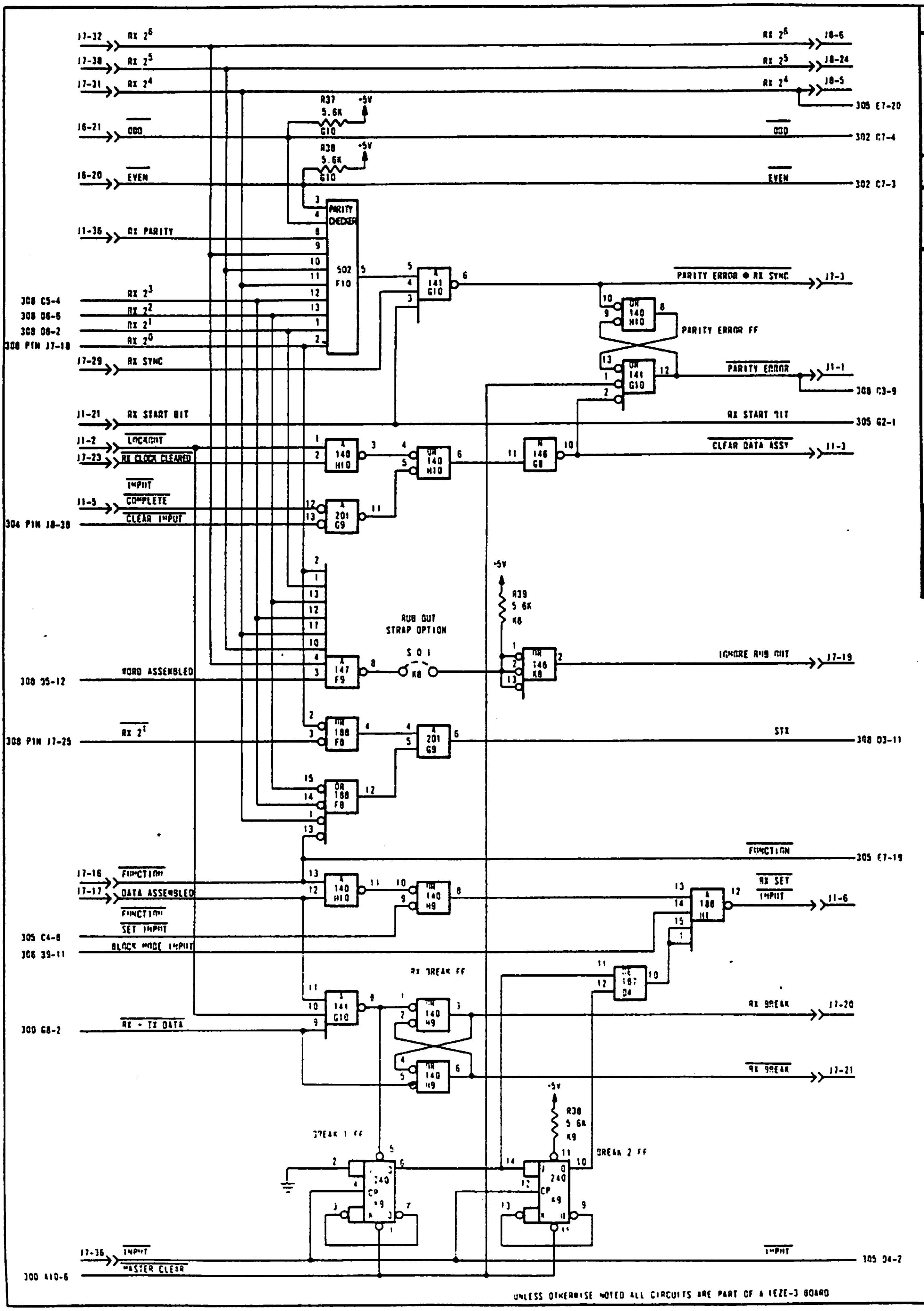
DWG NO 62188800

REV A

SHEET 7

CROSS REF NO 305


COMPRESSION MODE CONTROLS
CONTROL DATA
DWG NO 62188800
CODE IDENT 15920
C
SHEET 8
CROSS REF NO 306
REV A
308 D6-4
301 PIN J8-22
T1
READ MEMORY
OR 188 A8
READ MEMORY • T1
308 A6-5
+5V
R34 5.6K 06
COMPARE 501 D7
CODE = 40$_8$ (SPACE)
J1-38
CODE > 40$_8$
CODE < 40$_8$
J1-9
EXPANDED MEMORY
OR 140 A6
302 PIN J2-27
302 PIN J2-7
302 PIN J2-26
302 PIN J2-6
MEMORY 2^6
MEMORY 2^5
MEMORY 2^4
MEMORY 2^3
N 146 B8
DECODER 167 E10
FUNCTION DECODER
302 PIN J2-25
302 PIN J2-5
302 PIN J2-24
MEMORY 2^2
MEMORY 2^1
MEMORY 2^0
OR 141 A7
N 146 B8
OR 188 A8
EOT (004)
308 B4-3
A 140 A6
301 D2-8
READ MEMORY
FUNCTION CLEAR
J8-28
A 141 A7
300 B8-8
T3
A 140 A6
A 201 B8
READ MEMORY • T2
J1-16
BLOCK MODE INPUT
J1-15
J1-12
SET BLOCK MODE SKIP
OR 140 B9
BLOCK MODE INPUT
J1-14
307 H1-14
301 H8-6
BLOCK XFER
A 188 A8
N 146 B8
CARRIAGE RETURN FF
A 147 D9
OR 140 B9
OR 143 A9
CARRIAGE RETURN
J1-10
BLOCK MODE SKIP FF
OR 140 B9
OR 143 A9
BLOCK MODE SKIP
J1-11
301 F7-2
305 A5-12
X CURSOR
J8-20
TERM COUNT
T2
OR 188 F8
A 141 A7
300 D2-4
301 K8-8
300 A10-3
CLEAR BLOCK XFER
MASTER CLEAR
A 188 A8
A 140 A7
J8-27
J8-15
J8-34
EXPANDED MEMORY
X • Y COMPARE
B BUSY
J7-35
J7-33
J7-34
R35 33 G10
Q1 G10
51303108 301 108
R36 560 G10
C11 6.8
C12 6.8
CR6 5.6V G10
-5V
305 F2-11(3)
UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 1EZE-3 BOARD



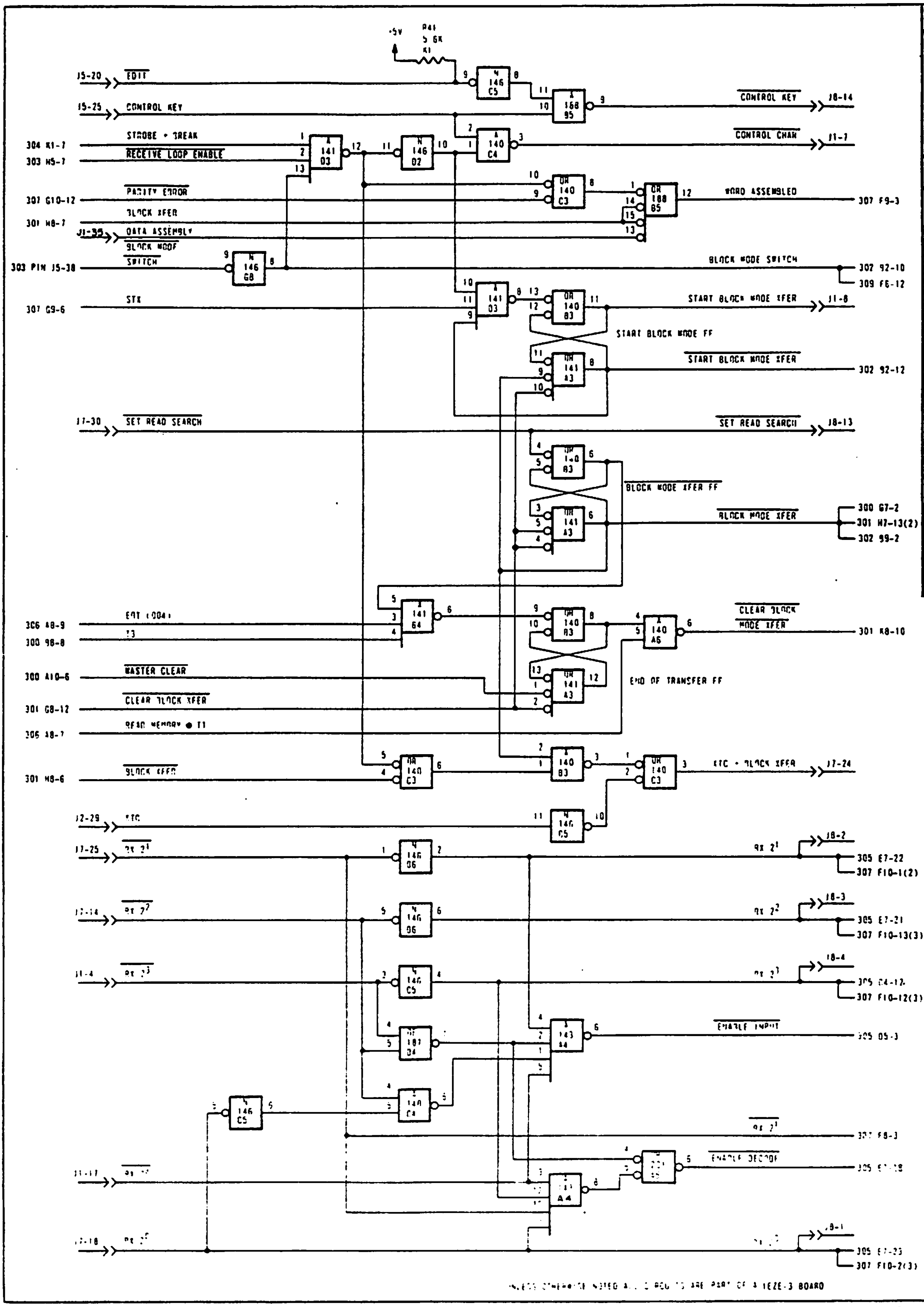
CONTROL DATA

PARITY AND BREAK CHECKERS

CODE IDENT	SIZE	DWG NO	REV
15920	C	62188800	A

CROSS REF NO 307

SHEET 9



REV A

DWG NO 62188800

SHEET 10

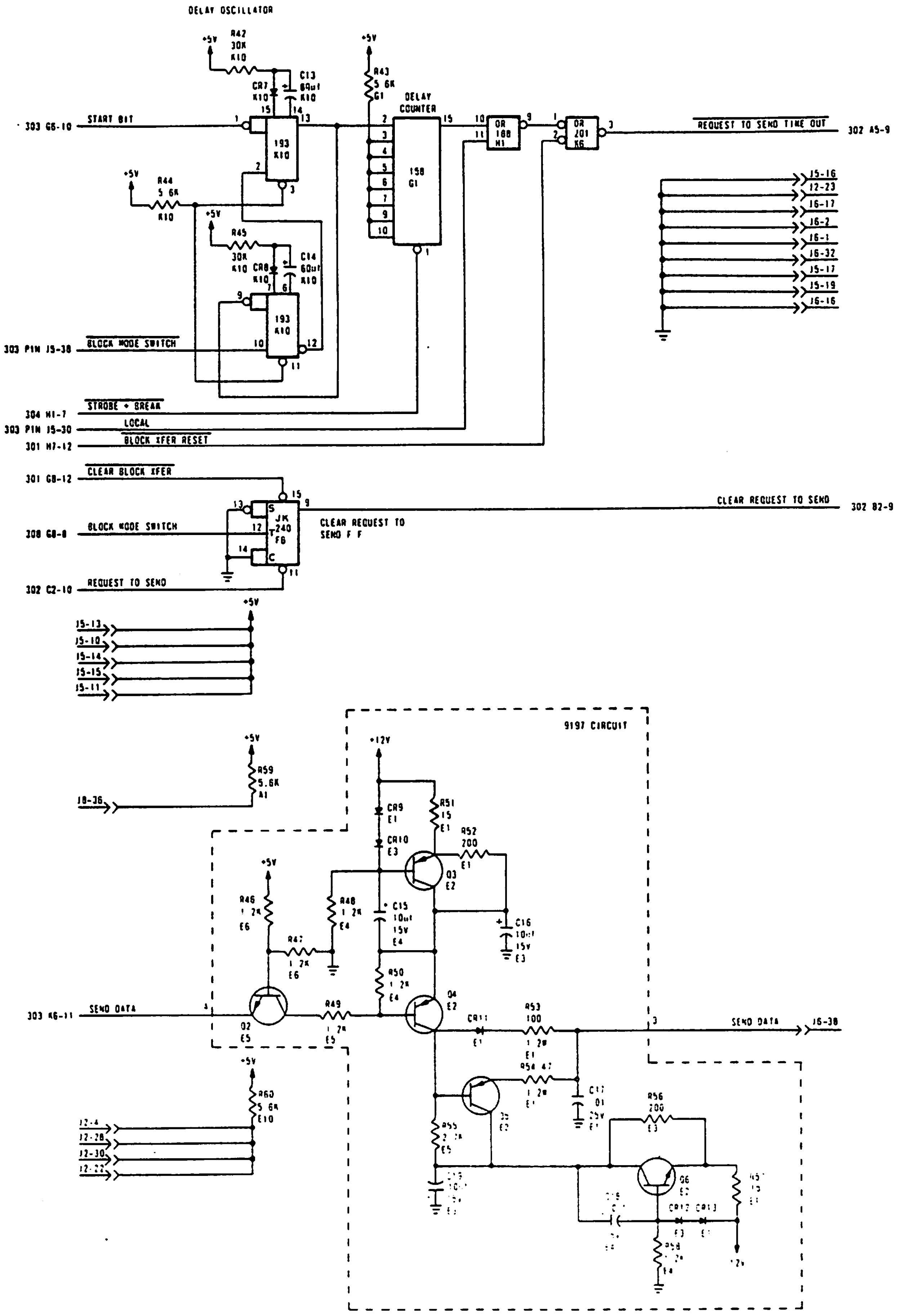
CROSS REF NO 308

C

CODE IDENT 15920

BLOCK MODE TRANSFER CONTROLS

CONTROL DATA



UNLESS OTHERWISE NOTED ALL [illegible] ARE PART OF A 1EZE-3 BOARD.

CONTROL DATA

REQUEST TO SEND TIME OUT

CODE IDENT 15920

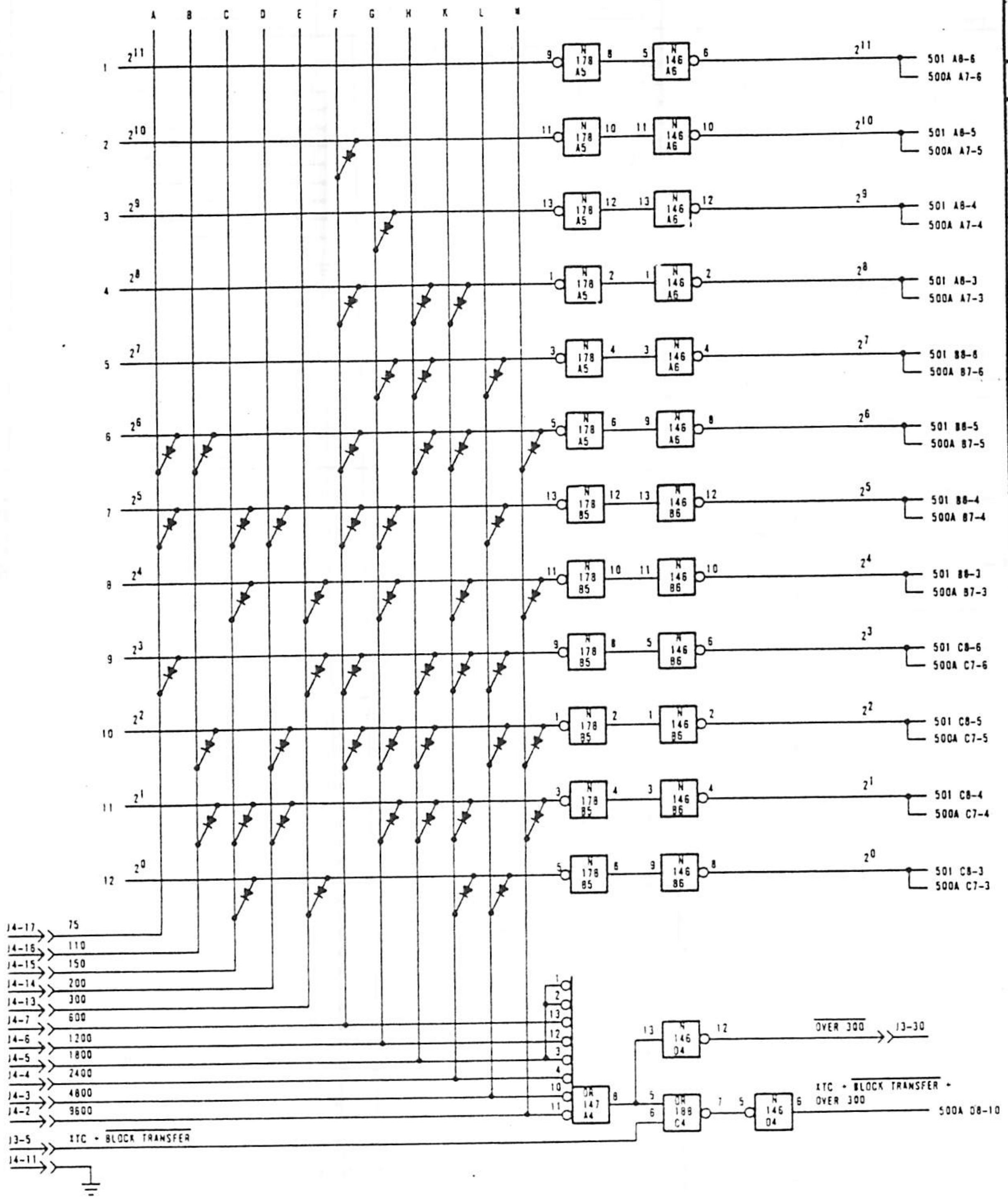
C

DWG NO 62188800

REV A

CROSS REF NO 309

SHEET 11



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 28C0-1 BOARD LOCATED AT

REV A

DWG NO 82295200

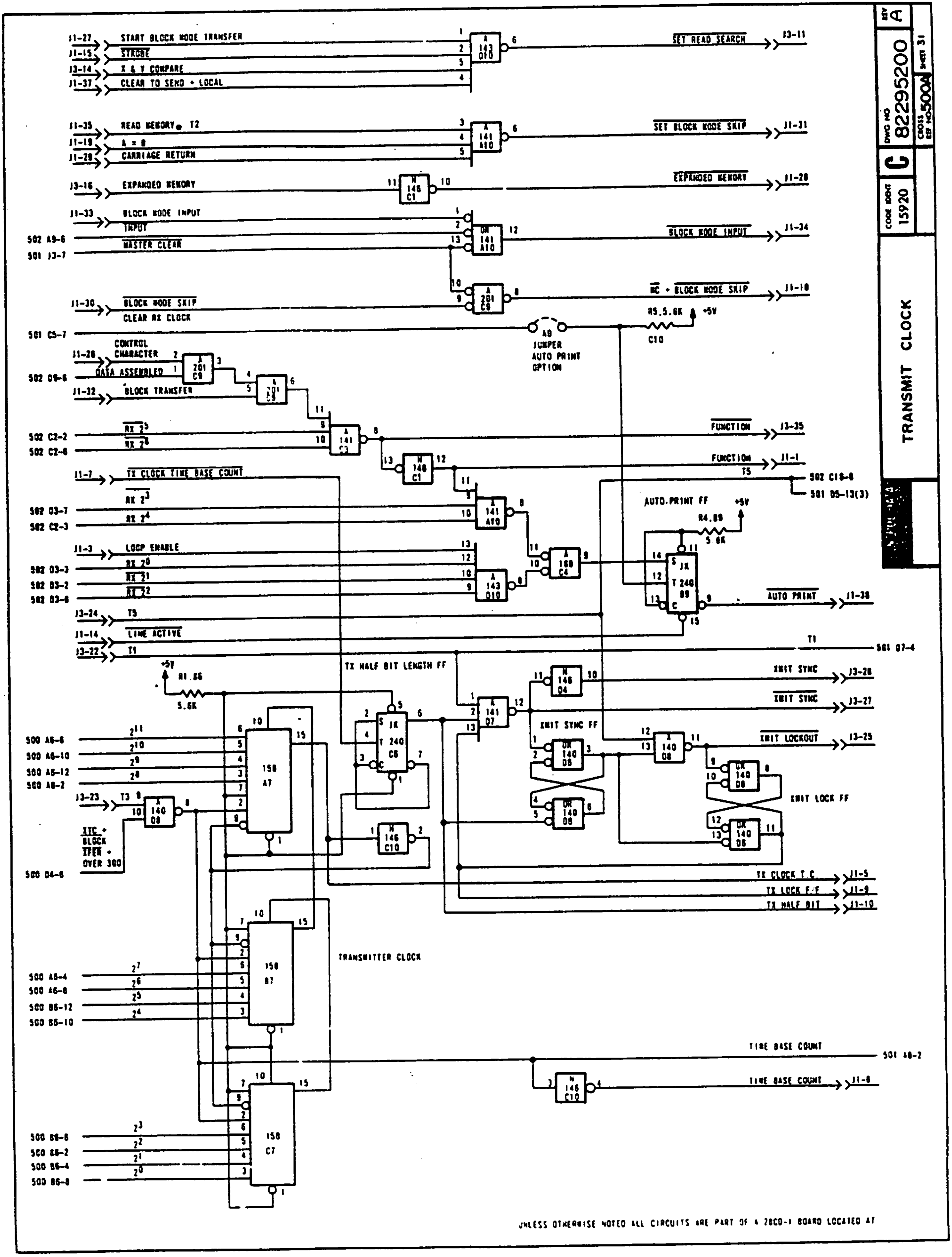
CODE IDENT 15920

C

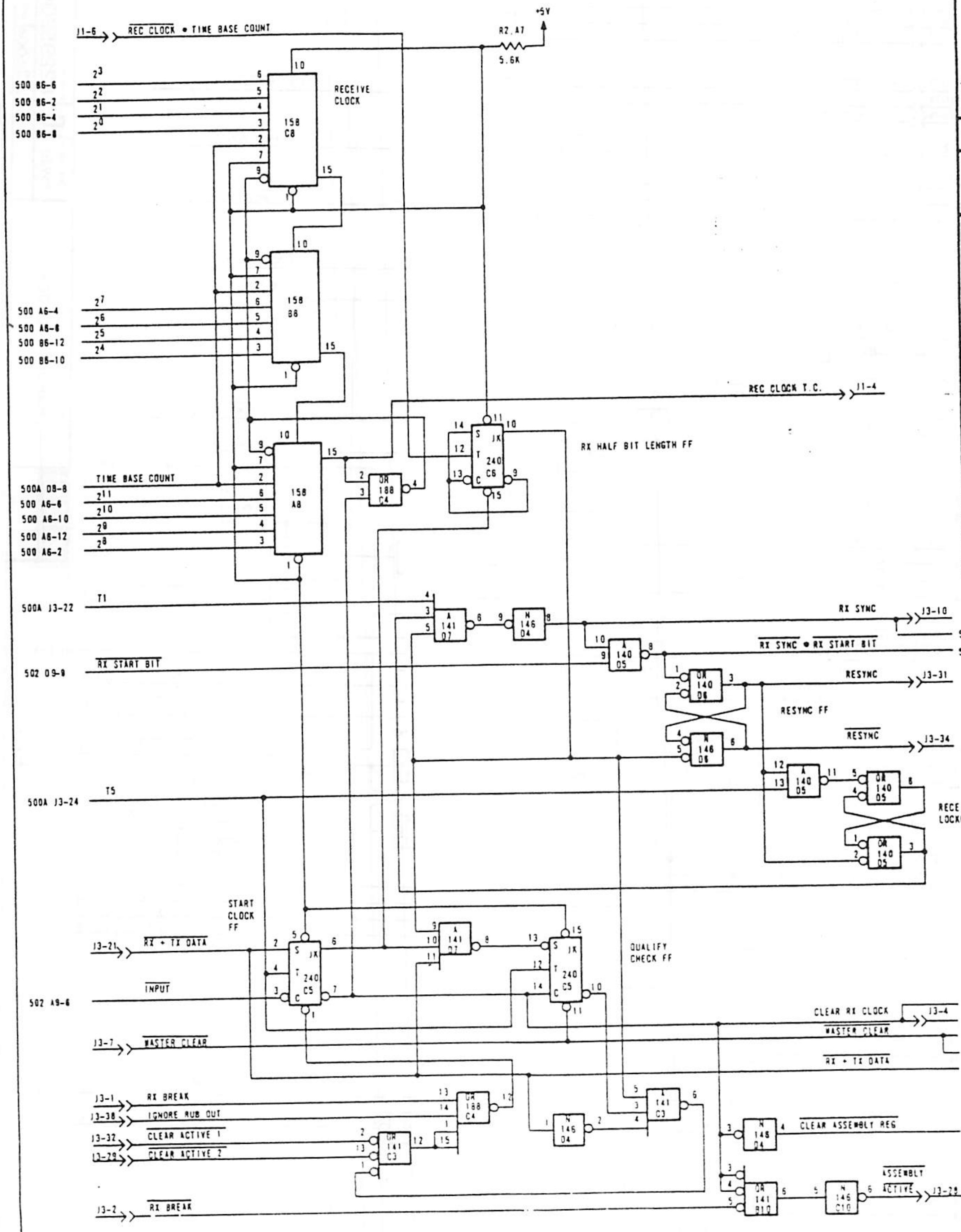
CROSS REF NO 500

SHEET 30

CLOCK MATRIX



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 28CO-1 BOARD LOCATED AT



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 2800-1 BOARD LOCATED AT

REV A

CODE IDENT 15920

C

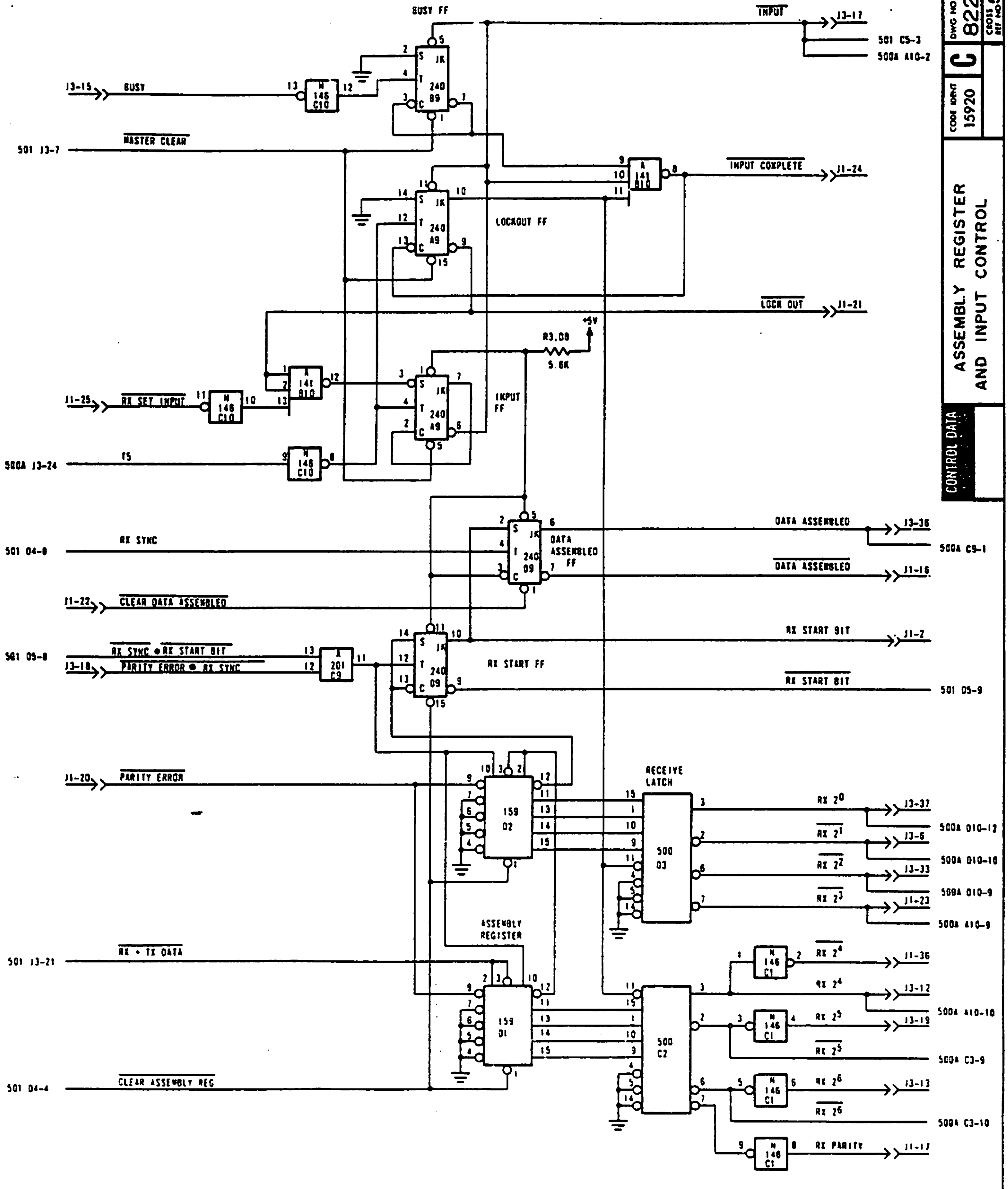
DWG NO 82295200

CROSS REF NO 501

SHEET 32

RECEIVE CLOCK

CONTROL DATA



UNLESS OTHERWISE NOTED ALL CIRCUITS ARE PART OF A 28CO-1 BOARD LOCATED AT

CONTROL DATA

ASSEMBLY REGISTER
AND INPUT CONTROL

CODE IDENT 15920
C
DWG NO 82295200
REV A
CROSS REF NO 502
SHEET 33

CONN NO	SIGNAL

CONN NO	SIGNAL
J2- 1	$\overline{\text{CLEAR "CLEAR MEMORY"}}$
J2- 2	TOP LINE
J2- 3	
J2- 4	
J2- 5	MEMORY OUTPUT 2^0
J2- 6	MEMORY OUTPUT 2^2
J2- 7	MEMORY OUTPUT 2^4
J2- 8	MEMORY OUTPUT 2^6
J2- 9	
J2-10	XIC
J2-11	
J2-12	CURSOR X 2^2
J2-13	CURSOR X 2^0
J2-14	$\overline{\text{T5}}$
J2-15	
J2-16	
J2-17	$\overline{\text{MC}}$
J2-18	
J2-19	$\overline{\text{T1}}$
J2-20	T4
J2-21	$\overline{\text{T3}}$
J2-22	
J2-23	
J2-24	MEMORY OUTPUT 2^1
J2-25	MEMORY OUTPUT 2^3
J2-26	MEMORY OUTPUT 2^5
J2-27	
J2-28	
J2-29	$\overline{\text{T0}}$
J2-30	CURSOR X 2^6
J2-31	CURSOR X 2^1
J2-32	
J2-33	
J2-34	$\overline{\text{X RESET}}$
J2-35	COUNT UP
J2-36	$\overline{\text{CURSOR X } 2^3}$
J2-37	5LINE I C
J2-38	

CONN NO	SIGNAL
J3- 1	+5V
J3- 2	
J3- 3	+12V
J3- 4	-12V
J3- 5	GROUND
J3- 6	(KEYED PIN)
J3- 7	
J3- 8	+12V
J3- 9	-12V
J3-10	GROUND
J4- 1	(KEYED PIN)
J4- 2	
J4- 3	
J4- 4	COMPOSITE VIDEO 1
J4- 5	COMPOSITE VIDEO 2
J4- 6	
J4- 7	$\overline{\text{50 HZ}}$
J4- 8	GROUND
J4- 9	GROUND
J4-10	GROUND

CONN NO	SIGNAL
J5- 1	INPUT BUFFER 2^6
J5- 2	INPUT BUFFER 2^3
J5- 3	GROUND
J5- 4	GROUND
J5- 5	GROUND
J5- 6	$\overline{\text{MEMORY MULTIPLEX } 2^3}$
J5- 7	$\overline{\text{MEMORY MULTIPLEX } 2^1}$
J5- 8	MEMORY OUTPUT 2^1
J5- 9	MEMORY OUTPUT 2^4
J5-10	$\overline{\text{MEMORY MULTIPLEX } 2^4}$
J5-11	$\overline{\text{EXPANDED MEMORY}}$
J5-12	MC · CLEAR
J5-13	INPUT BUFFER 2^5
J5-14	INPUT BUFFER 2^1
J5-15	$\overline{\text{READ MEMORY}}$
J5-16	CLEAR MEMORY
J5-17	INPUT BUFFER 2^4
J5-18	INPUT BUFFER 2^0
J5-19	INPUT BUFFER 2^2
J5-20	MEMORY OUTPUT 2^2
J5-21	$\overline{\text{MEMORY MULTIPLEX } 2^2}$
J5-22	$\overline{\text{MEMORU MULTIPLEX } 2^6}$
J5-23	MEMORY OUTPUT 2^6
J5-24	MEMORY OUTPUT 2^3
J5-25	$\overline{\text{MEMORY MULTIPLEX } 2^0}$
J5-26	MEMORY OUTPUT 2^0
J5-27	MEMORY OUTPUT 2^5
J5-28	$\overline{\text{MEMORY MULTIPLEX } 2^5}$
J5-29	WRITE
J5-30	SHIFT MEMORY
J5-31	Y^1 2^1
J5-32	CURSOR Y 2^1
J5-33	Y^1 2^0
J5-34	CURSOR ·Y 2^0
J5-35	Y^1 2^3
J5-36	CURSOR Y 2^3
J5-37	CURSOR Y 2^2
J5-38	Y^1 2^2

CONN NO	SIGNAL
J6- 1	$\overline{\text{CURSOR X TERMINAL COUNT}}$
J6- 2	$\overline{\text{T2}}$
J6- 3	$\overline{\text{PEAD MEMORY}}$
J6- 4	
J6- 5	INPUT BUFFER 2^5
J6- 6	$\overline{\text{LINE CLEAR}}$
J6- 7	INPUT
J6- 8	$\overline{\text{Y2}^0}$ $\overline{\text{EXPANDED MEMORY}}$
J6- 9	$\overline{\text{FUNCTION CHAR}}$
J6-10	
J6-11	
J6-12	$\overline{\text{BACKSPACE}}$
J6-13	$\overline{\text{RESET}}$
J6-14	$\overline{\text{SKIP}}$
J6-15	BUSY
J6-16	
J6-17	GROUND
J6-18	$\overline{\text{CLEAR}}$
J6-19	$\overline{\text{CLEAR INPUT BUFFER}}$
J6-20	INPUT BUFFER 2^0
J6-21	INPUT BUFFER 2^1
J6-22	INPUT BUFFER 2^2
J6-23	INPUT BUFFER 2^3
J6-24	INPUT BUFFER 2^4
J6-25	INPUT BUFFER 2^6
J6-26	
J6-27	T3
J6-28	
J6-29	$\overline{\text{DISABLE SCROLL}}$
J6-30	
J6-31	
J6-32	$\overline{\text{SET READ SEARCH}}$
J6-33	$\overline{\text{CONTROL KEY}}$
J6-34	X COMPARE ● Y COMPARE
J6-35	$\overline{\text{CURSOR UP}}$
J6-36	$\overline{\text{CURSOR DOWN}}$
J6-37	
J6-38	

CONTROL DATA	SIGNAL IDENTIFIER IFDE-I BOARD	CODE IDENT 15920	C	DWG NO 82295200	REV B
				CROSS REF NO	SHEET 34

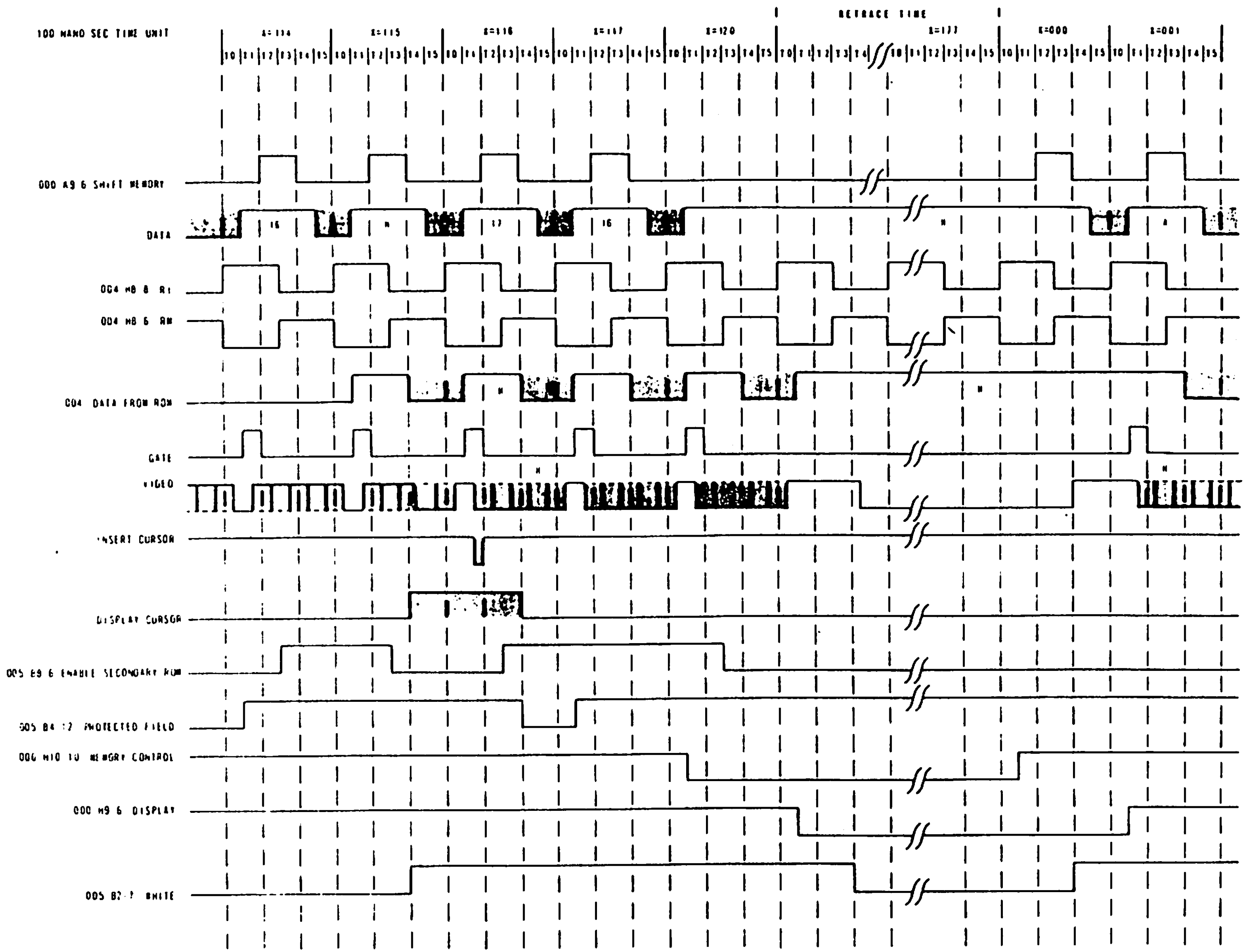
CONNECTOR NUMBER	SIGNAL
J1- 1	+5V
J1- 2	
J1- 3	+12V
J1- 4	-12V
J1- 5	GROUND
J1- 6	
J1- 7	
J1- 8	+12V
J1- 9	-12V
J1-10	GROUND

CONNECTOR NUMBER	SIGNAL
J3- 1	INPUT BUFFER 2^6
J3- 2	INPUT BUFFER 2^3
J3- 3	EXPANDED MEMORY
J3- 4	
J3- 5	
J3- 6	
J3- 7	
J3- 8	
J3- 9	
J3-10	
J3-11	
J3-12	ENABLE ALL LINES
J3-13	INPUT BUFFER 2^5
J3-14	INPUT BUFFER 2^1
J3-15	READ MEMORY
J3-16	CLEAR MEMORY
J3-17	INPUT BUFFER 2^4
J3-18	INPUT BUFFER 2^0
J3-19	INPUT BUFFER 2^2
J3-20	
J3-21	
J3-22	
J3-23	
J3-24	
J3-25	
J3-26	
J3-27	
J3-28	
J3-29	WRITE
J3-30	SHIFT MEMORY
J3-31	Y^1 2^1
J3-32	CURSOR Y 2^1
J3-33	Y^1 2^0
J3-34	CURSOR Y 2^0
J3-35	Y^1 2^0
J3-36	CURSOR Y 2^3
J3-37	CURSOR Y 2^2
J3-38	Y^1 2^2

CONNECTOR NUMBER	SIGNAL
J4- 1	MEMORY OUTPUT 2^2
J4- 2	MEMORY MULTIPLEX 2^2
J4- 3	MEMORY MULTIPLEX 2^6
J4- 4	MEMORY OUTPUT 2^6
J4- 5	MEMORY OUTPUT 2^3
J4- 6	MEMORY MULTIPLEX 2^0
J4- 7	MEMORY OUTPUT 2^0
J4- 8	MEMORY OUTPUT 2^5
J4- 9	MEMORY MULTIPLEX 2^5
J4-10	WRITE
J4-11	SHIFT MEMORY
J4-12	Y^1 2^1
J4-13	CURSOR Y 2^1
J4-14	Y^1 2^0
J4-15	CURSOR Y 2^0
J4-16	Y^1 2^3
J4-17	CURSOR Y 2^3
J4-18	CURSOR Y 2^2
J4-19	Y^1 2^2
J4-20	INPUT BUFFER 2^6
J4-21	INPUT BUFFER 2^3
J4-22	GROUND
J4-23	GROUND
J4-24	GROUND
J4-25	MEMORY MULTIPLEX 2^3
J4-26	MEMORY MULTIPLEX 2^1
J4-27	MEMORY OUTPUT 2^1
J4-28	MEMORY OUTPUT 2^4
J4-29	MEMORY MULTIPLEX 2^4
J4-30	EXPANDED MEMORY
J4-31	ENABLE ALL LINES
J4-32	INPUT BUFFER 2^5
J4-33	INPUT BUFFER 2^1
J4-34	READ MEMORY
J4-35	CLEAR MEMORY
J4-36	INPUT BUFFER 2^4
J4-37	INPUT BUFFER 2^0
J4-38	INPUT BUFFER 2^2

CONNECTOR NUMBER	SIGNAL

CONTROL DATA	SIGNAL IDENTIFIER MEMORY BOARD	CODE IDENT 15920	C	DWG NO 82295200	REV A
				CROSS REF NO	SHEET 35



NOTE

SHADED AREAS INDICATE
INDETERMINABLE LOGIC
LEVELS

CONTROL DATA

MEMORY TIMING,
DISPLAY TIMING, & CONTROL

CODE IDENT 15920

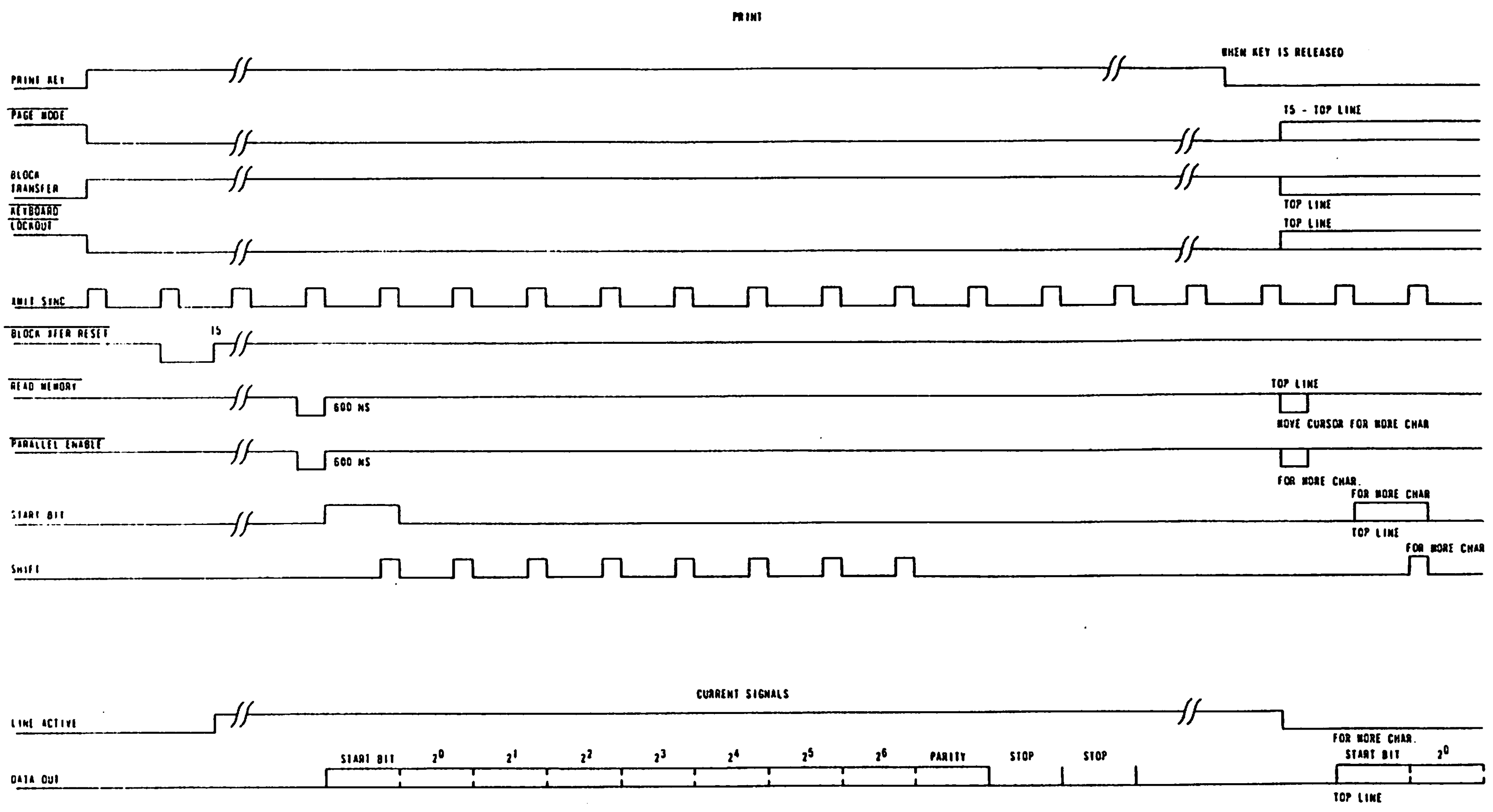
C

DWG NO 82295200

REV A

CROSS REF NO

SHEET 36



CONTROL DATA

TIMING DIAGRAM

CODE IDENT 15920

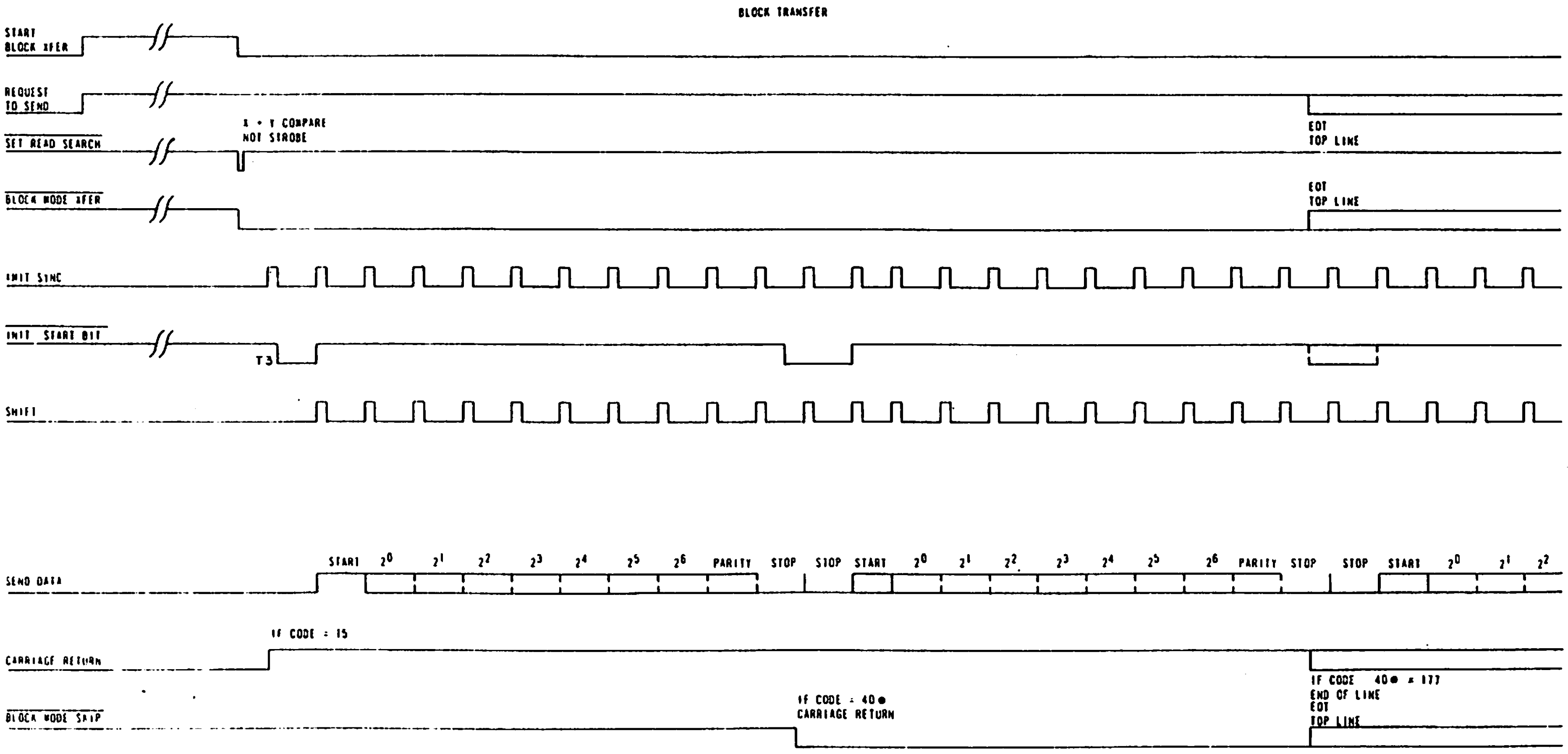
C

DWG NO 82295200

REV A

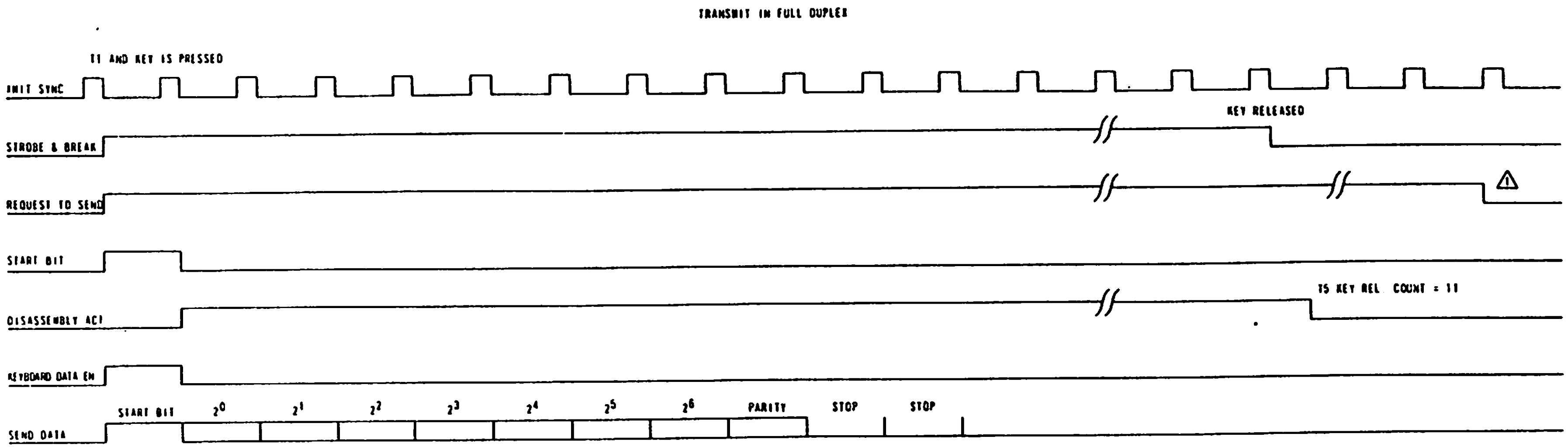
CROSS REF NO

SHEET 37



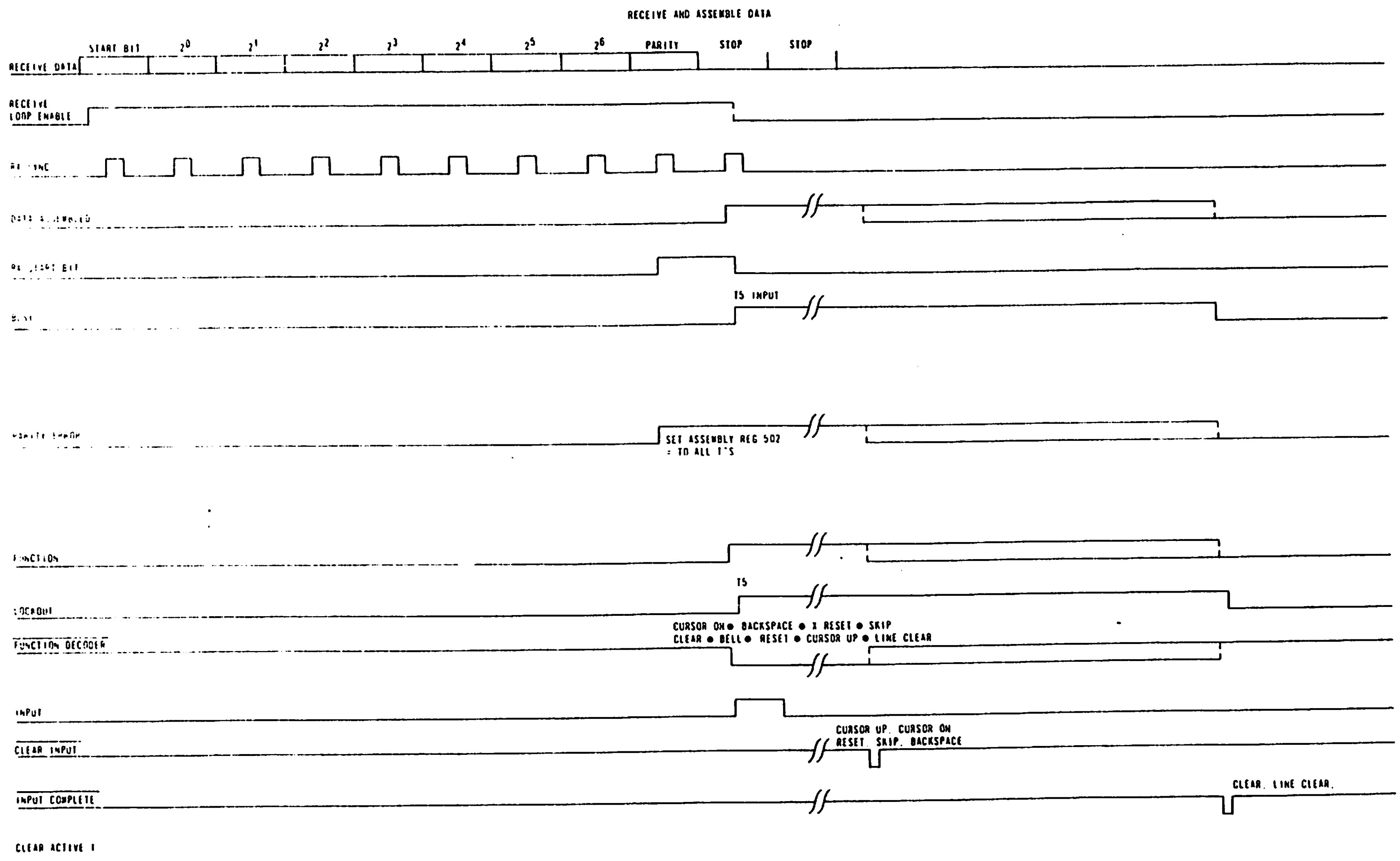
COMPRESSION MODE (CARRIAGE RETURN, BLOCK MODE SKIP) ARE USED IN BOTH PRINT + BLOCK TRANSFER OPERATIONS

CONTROL DATA	TIMING DIAGRAM	CODE IDENT 15920	C	DWG NO 82295200	REV A
				CROSS REF NO	SHEET 38



⚠ ~ 10 SEC AFTER KEY PRESS.
ENTER LOCAL OR BLOCK MODE
PRINT

CONTROL DATA	TIMING DIAGRAM	CODE IDENT 15920	C	DWG NO 82295200	REV A
				CROSS REF NO	SHEET 39



CONTROL DATA

TIMING DIAGRAM

CODE IDENT 15920
C
DWG NO 82295200
REV A
CROSS REF NO
SHEET 40

COMMENT SHEET

MANUAL TITLE QSE 14965 Conversational Display Terminal
Special Purpose Manual

PUBLICATION NO. 62976100 REVISION B

FROM: NAME:
BUSINESS ADDRESS:

COMMENTS:

This form is not intended to be used as an order blank. Your evaluation of this manual will be welcomed by Control Data Corporation. Any errors, suggested additions or deletions, or general comments may be made below. Please include page number references and fill in publication revision level as shown by the last entry on the Record of Revision page at the front of the manual. Customer engineers are urged to use the TAR.

Missing 13, 14

CUT ALONG LINE

PRINTED IN U.S.A

REV. 11/69

NO POSTAGE STAMP NECESSARY IF MAILED IN U. S. A.

CONTROL DATA

REPAIR CHANGE ORDER

R.C.O. NO. RCO CDO 8697	REV.			
PAGE 1 OF 1				
Module Name LOGIC MODULE	Est.Hrs 0.5	Module Qty 926	Title of Change ELIMINATE COMPRESSION MODE FAILURE	
Reason for Change To eliminate possible intermittent compression mode failure due to speed differences in chips			Related ECO/FCO/DA No.s ECO DT1704	

1. Equip.Mod. used on 2. Parts Req'd, 3.Special Tools Req'd, 4. Change Installation Procedure, 5.Identification, 6.Old Parts Disposition 7. Pubs Affected, 8.Software Affected.

1. Equipment used on: QSE14965 Module P/N 61338500 QTY Equip. 896 Spares 30

2. Parts Required: QTY AR DESCRIPTION Wire 30 GA., P/N 52629902

3. Special Tools Required: N/A

4. Change Installation Procedure:
   A. Remove 1EZE-3 board P/N 90366500 from location B1 of Logic Module
   B. Cut foil at B6-10
   C. Add wire from A7-2 to B6-10
   D. Install 1EZE-3 board in location B1 and recable module

5. Identification: Attach RCO sticker near I.D. Plate of Logic Module

6. Old Parts Disposition: N/A

7. Pubs Affected: Manual for QSE14965 Pub. No. 62976100

8. Software Affected: N/A

NOTE: Change to be installed by Computing Device of Canada repair center only.

ORIGINATOR	DATE	DIV. ENGINEERING APPROVAL	OEM E DIV. APPROVAL	ECA	DATE	TYPE
M.J. O'Donnell	3/8/74	5/9/74	P.C. Warner 5/9/74	Gary	5/10/74	1

AGT

PLANT — ENGINEERING **OPERATIONS MEMORANDUM** #424

DATE: May 20, 1976
REVIEW DATE: December 1976

ATTENTION: Foremen - All Data I & R Centres
- Data Repairshop
- Plant Training

ORIGINATOR: Harold Hubka

TELEPHONE: 425-7353

TRAINING
FOREMAN
JUN 4 RECD
CALGARY

NIP PRINTER HEAD BURN-OUTS

1. GENERAL

1.01 Recently the Data Repairshop serviced a number of NIP printers all from one location and all with printhead elements burnt-out. Subsequent investigation showed that R117 on the signal processing board was adjusted fully clockwise causing excessive print pulse duration and the resultant excessive heat build up on the print head elements. Since R117 is adjustable only with a screwdriver and not easily accessible, only technicians familiar with or being trained on the printer would know about this control.

1.02 It is therefore essential to exercise care when making adjustments for print contrast and reference should be made to the service data section of the NIP maintenance manual. (Page 4 - 11 Paragraph 4.3.7 Head Compensating Circuit). This section explains the procedure for adjusting R117 for proper print pulse duration.

☎ AGT

PLANT — ENGINEERING **OPERATIONS MEMORANDUM#** 337

DATE: January 17, 1975
REVIEW DATE: August, 1975

ATTENTION: Business Communications Plant and Operations Plant Foremen responsible for Vucom I Service

ORIGINATOR: H.W. Truderung, Business Communications Engineering Methods and Maintenance

PHONE: 425-7353

STATUS: Informative

VUCOM I POWER SUPPLIES

1. PROBLEM HISTORY

1.01 An abnormal number of defective power supplies exhibiting similar component failures have shown up in the Data Repairshop.

2. CAUSE

2.01 The nature of the problem indicates that the failures are most probably being caused by voltage measurements being made with uninsulated probes. The four testpoints (TP1 thru 4) are accessible through a cutout provided in the power supply cage. When measurements are done with an uninsulated probe, extreme care must be taken to avoid touching the metal cage and testpoints simultaneously.

3. SOLUTION

3.01 Any voltage measurements done on the Vucom 1 power supply should be done using an insulating material, such as a short piece of 'spaghetti', covering all but the extreme tip of the probe. The Data Repairshop will henceforth be inserting grommet stripping around the cutout. The manufacturer has been contacted regarding a corrective change at time of assembly.

PLANT — ENGINEERING **OPERATIONS MEMORANDUM** #340

DATE: February 3, 1975
REVIEW DATE: February 1976

ATTENTION: All Business Communications and Operations Plant Foremen Responsible for Maintaining VUcom 1

ORIGINATOR: John McCormick

TELEPHONE: 425-7353

BACKSPACING PROBLEM ON MAGNETIC TAPE RECORDER (TERMICETTE)

1. PROBLEM IDENTIFICATION

1.01 Errors experienced when backspacing. These errors usually consist of the failure to delete a character or the deletion of an extra character.

1.02 These errors will be noticed especially when backspacing remotely, backspacing a large number of characters or correcting several consecutive characters.

2. EXPLANATION

2.01 Small speed variations in the Termicette will cause slight differences in length of tape required for each character. These small differences are cumulative when correcting several characters.

2.02 Tape position drift caused by differences in the forward and reverse speed.

3. SOLUTION

3.01 Ascertain that the operation of the unit conforms to the procedures and limitations specified in the technical manial ICP 001-103 (BSP 600-1012-100) section 2.8.

3.02 Check to see the cassette is of data quality (ANSI Specifications). The present AGT standard is the ICP 30-300 cassette.

3.03 Check the unit with a different cassette since tape performance degrades with repeated use.

AGT

PLANT — ENGINEERING   OPERATIONS MEMORANDUM # 355

DATE: May 22, 1975
REVIEW DATE: May, 1976

ATTENTION: Foremen Responsible for Maintaining Magnetic Recorder Terminal L1 (ICP - Termicette 3300-2) Associated with VUcom 1 Services.

ORIGINATOR: G.M. Gonek

TELEPHONE: 425-7353

SERIALIZER BOARD MODIFICATION

1. PROBLEM IDENTIFICATION

1.01 All I.C.P. magnet recorders using the old 450-183 Serializer Board will fail a 25% Marking End Distortion Test.

2. PROBLEM SOURCE

2.01 The problem lies in original design, in which the on-board half bit counter (Z11-9 and Z9-11) is reset on each mark-to-space transition. Resetting this counter advances the circuitry to the next half-bit, which causes subsequent center-sampling to be performed sooner than it should. The bias tests do not show degradation because all M-to-S changes occur at the proper time. The spacing end distortion test will pass because early center sampling will pick up the proper bit level. Only in the end distortion test will early sampling (begun in bit 2) cause an error (bit 4 will be read as a mark instead of a space). The percentage distortion at which errors will first occur is 25%. At this point, the M-to-S transition in bit 2 advances the center-sampling process by 1/4 bit. Thus, when bit 4 is sampled, the sample point will just overlap the 1/4 bit distortion from the distortion generator.

3. RECOMMENDED SOLUTION

3.01 This problem can be corrected by the following procedure: On the 450-183 Serializer Board, (1) Disconnect Z6 pin 2 (cut the foil), (2) Short Z 11 pin 6 to Z 11 pin 7. (refer to attached diagram). The new 450-215 Serializer Board does not have the above problem and is factory tested to 44% distortion levels before being used in any termicette.

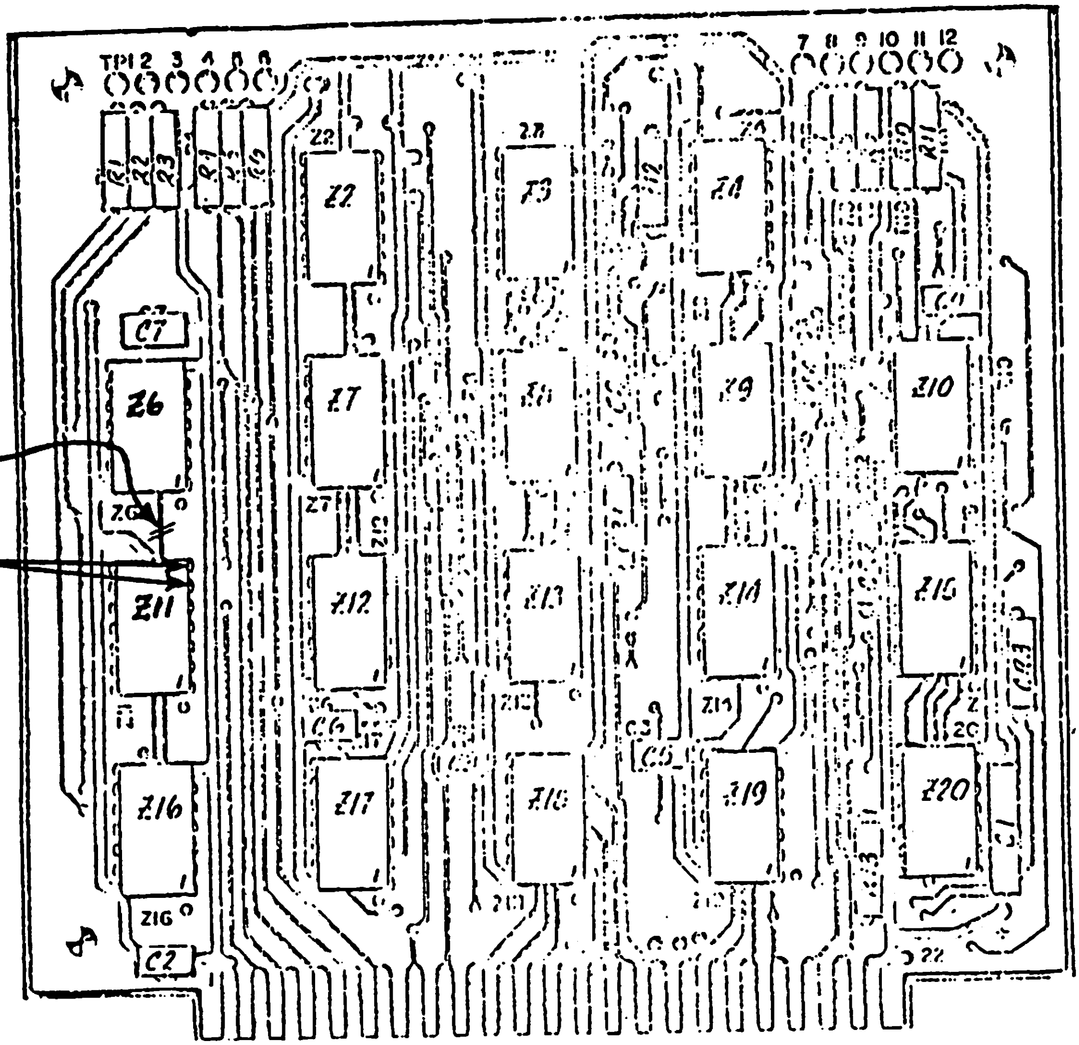
It is suggested that the Foreman concerned initiate this locally during the next Preventive Maintenance Schedule.

SERIALIZER

450-183-01

COMPONENT DESIGNATORS

REV. 2 ARTWORK



(1) DISCONNECT Z6 PIN 2 (CUT THE FOIL).

(2) SHORT PIN 6 TO PIN 7 ON Z 11

☎ AGT

PLANT — ENGINEERING **OPERATIONS MEMORANDUM** # 356

DATE: May 22, 1975
REVIEW DATE: May 22, 1976

ATTENTION: Foremen Responsible for Maintaining Magnetic Recorder Terminal L1 (I.C.P. - Termicette 3300-2) Associated with Vucom 1 Services

ORIGINATOR: G.M. Gonck

TELEPHONE: 425-7353

SOLUTION TO NON-INTERCHANGEABILITY OF DATA FILES

1. PROBLEM IDENTIFICATION

1.01 Data files created on a new I.C.P. tape unit are not always compatible with older I.C.P. units - errors occur on playback.

2. PROBLEM SOURCE

2.01 The most probable cause of non-interchangeability is relative alignment from machine to machine. Normally, newer units should be two-way compatible with older machines unless the older recorder is significantly out of alignment.

Another very important factor in maintaining good interchangeability is bulk erasure of tapes containing obsolescent data. Although a tape can be erased by recording new data over old, such old recordings can leave "fringes" that during interchange can cause errors if alignment of the two machines is different.

3. RECOMMENDED SOLUTION

3.01 If interchangeability of units results in problems, the I.C.P. unit should be sent to Edmonton Data Repair Shop for repair. In regards to the recommended use of a bulk eraser, this is an optional item which is available from certain distributors - Memo - Cord MX500 (approx. $25.00) is one type of eraser.

AGT

PLANT — ENGINEERING **OPERATIONS MEMORANDUM# 397**

DATE: November 25, 1975
REVIEW DATE: May, 1975

ATTENTION: Data Repairshop
All I & R - Data Foremen

ORIGINATOR: Harold Hubka

TELEPHONE: 425-7353

VUCOM I DISPLAY TERMINAL

1. GENERAL

1.01 This Operations Memorandum is directed to all personnel involved in the installation and repair of the Vucom I Display Terminal.

1.02 The TV Module on the Vucom I is isolated from the main chassis ground. Due to the flexibility of the Logic Module Card Rack, it is possible to ground the TV module by pushing the logic module against the CRT support structure. When this occurs, the video portion of the power supply can be damaged and usually destroys SCR QX6.

2. SOLUTION

2.01 The display terminal, when shipped from the manufacturer, has a piece of urethane foam placed in between the logic and TV modules to prevent damage during transit.

Please ensure that this foam block is left in place at all times. Should this foam block be missing from the packing box used to transport the terminal, any foam block approximately 4" x 4" x 1" thick will suffice.